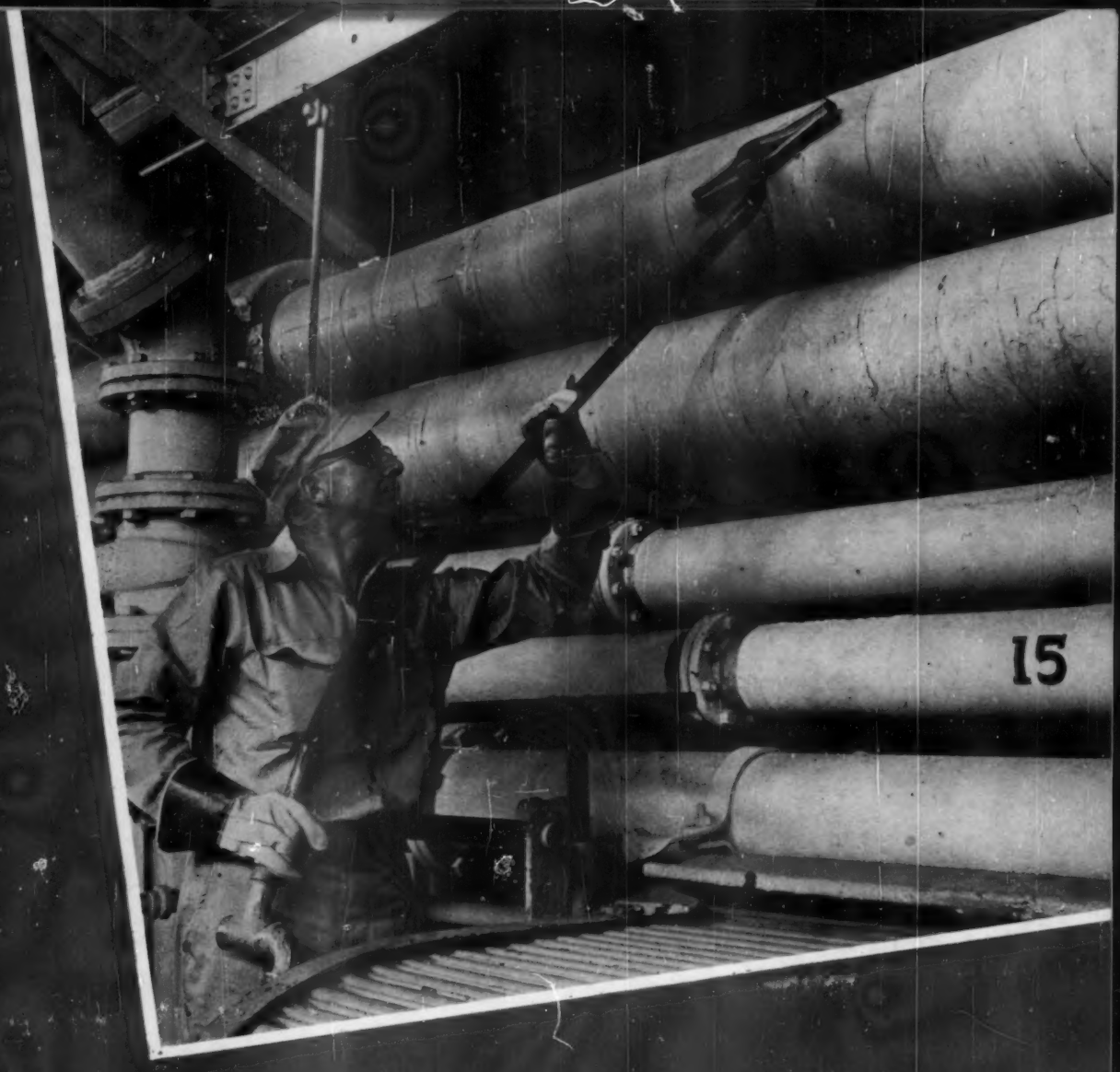

Safety Maintenance

and Production

EST. 1901 AMERICA'S PIONEER MAGAZINE IN ITS FIELD

FIFTY CENTS JANUARY, 1955

All-Plastic Goggles

NOW...AO† INTRODUCES TWO LIGHTWEIGHT SPECTACLE GOGGLES WITH COMPLETE INTERCHANGE OF LENSES AND TEMPLES!

Illustrated are Nos. 786 and 787 — two of the latest and lightest AO All-Plastic Lens Goggles, with noncorrosive endpieces and metal skull temples. In the field of lightweight eyecare they show the same benefits of applied engineering as AO's goggles for heavier exposures.

Lenses, endpieces, and temples can be easily replaced or assembled. One-piece lenses of either clear or green acetate have high impact resistance. Replacement is simple — just slide off the endpieces and reassemble. No. 786 is ideal for use over regular spectacles for temporary or "on and off" wear. Model 787 is identical except that it has side shields for added protection against laterally flying particles.

Recommended Uses

(1) For light grinding, light machining, spot welding, woodworking, yard work where dust hazards exist, and for protecting Safety Glasses or regular glasses.

(2) For plant visitors and others who may be exposed to eye hazards for short periods.

Keep an adequate supply of these goggles (and extra lenses) on hand always for good fitting. Check with your nearest AO Safety Products Representative.

American Optical
SAFETY PRODUCTS DIVISION

†T.M. Reg. by American Optical Company

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

(For details, use Key # A-1 on card on page 71)

get

modern

eye protection

WITH

JONES FULL VISION

CLEARVIEW VISOR GOGGLE
MODEL No. 1
WITH SCREENED PORTS

VISOR GOGGLES

WITH ALL THESE EXCLUSIVE FEATURES . . .

- VISOR TOP STOPS GLARE from overhead light
- 100% VISIBILITY for greater safety and comfort
- FITS over LARGE frame GLASSES
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- NEW VISOR head band suspension for added comfort
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- NEW down-angle lens
- INCREASED impact strength
- NO FOGGING—no pitting
- NO GLARE, distortion or reflection
- NEAT — smart — modern appearance
- SAFELY NON-FLAMMABLE
- LIGHT WEIGHT—cool comfortable
- ECONOMICAL to use
- ULTRA VIOLET ABSORBING LENSES

ASSURED WORKER ACCEPTABILITY

JONES FULL VISION VISOR GOGGLES

ONE-PIECE SHATTERPROOF PLASTIC LENS
(METHYL-METHACRYLATE)

for INDUSTRY and SPORTS

ELIMINATE EYESTRAIN and REDUCE FATIGUE

Ski Goggles
Safety Goggles
Sun Goggles

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talk to the man

... who has all the answers on the plant maintenance and engineering product, service, supply or machine you need to keep your plant running at top speed.

In fact, talk to the thousands of technical experts who will be on hand to welcome you to more than 400 exhibits.

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to **talk** *at the*

6th National Plant Maintenance & Engineering Show & Conference

International Amphitheatre, Chicago
January 24-27, 1955

To: Clapp & Poliak, Inc., Management
341 Madison Avenue
New York 17, N. Y.

Please send me free tickets for the 6th National Plant Maintenance & Engineering Show and information on the Conference.

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____

(Use Key # A-3 on Inquiry Card on page 71)

Program for

6th Plant Maintenance & Engineering Show

Chicago, Ill.

Monday, January 24

GENERAL SESSION (10:00 A.M. to 12:30 P.M.) International Amphitheatre
Opening Remarks by General Chairman
Panel Discussion: What Management Wants from the Maintenance Program; and What Maintenance Wants from Management

CONCURRENT SECTIONAL CONFERENCES (8 P.M. to 10 P.M.) Palmer House

1. Maintenance & Construction of Plant Buildings
2. Control of Maintenance Activities in the Process Industries by Means of Standardization & Labor Measurement
3. Organization of the Maintenance Force
4. Maintenance Cost Control
5. Sanitation (Panel Discussion)
6. Work Measurement & Work Standards
7. Preventive Maintenance—What's Good & What's Bad
8. Training the Maintenance Force

Tuesday, January 25

GENERAL SESSION (9:30 A.M. to 12:30 P.M.) International Amphitheatre
Panel Discussion: Planning & Scheduling Maintenance Work

MANUFACTURERS' EXHIBITION (Noon to 10 P.M.) International Amphitheatre

ROUND TABLE DISCUSSIONS (8 P.M. to 10 P.M.) Palmer House

1. Maintenance of Electronic Control Equipment
2. Maintenance of Electrical Distribution & Lighting
3. Corrosion Control & Prevention
4. Lubrication: Charts & Schedules; Standardization
5. Maintenance Stores & Storekeeping
6. Use of Punched Card Systems
7. Safety, Protection & Fire Prevention
8. Project Scheduling, Estimating & Control
9. Maintaining Power Plant Equipment
10. Materials Handling Equipment for Maintenance
11. Maintenance Manuals
12. Maintenance in Chemical Plants
13. Maintenance in Food Plants
14. Maintenance in Paper Mills & Paper Product Plants
15. Maintenance in Steel Mills
16. Maintenance in Textile Mills

Wednesday, January 26

GENERAL SESSION (9:30 A.M. to 12:30 P.M.) International Amphitheatre
Panel Discussion: Managing the Maintenance Operation

MANUFACTURERS' EXHIBITION (Noon to 6 P.M.) International Amphitheatre

ROUND TABLE DISCUSSIONS (8 P.M. to 10 P.M.) Palmer House
Continuations of the first 10 Round Tables listed for Tuesday.

Thursday, January 27

MANUFACTURERS' EXHIBITION (Noon to 6 P.M.) International Amphitheatre

PAYS OFF IN PRODUCTION

HEAVY-DUTY OR SILICONE LENS TISSUE

BOTH BEST FOR YOU

One company, reviewing its safety records, found that 68% of its employees who were frequently injured had poor vision. On the other hand, the employees with good safety records had good sight.

A single large industrial company reports that—over a four-year period—156 men saved an eye because they were wearing safety glasses. And they were keeping them clean.

1 American industry's swing to MAGIC LENS TISSUE (Silicone treated) is one of the greatest success stories of the Safety field. Each sheet is over 50% larger than usual, and has twice the tearing strength. Yet MAGIC costs you less. $8.40 per Carton (6 refills per carton). It polishes . . . and protects . . . as it cleans. The compact, self-mounting Dispenser is only $2.50. No screws. Just stick it to the wall.

2 And here is the MAGIC HEAVY-DUTY Cleaning Station for heavy-grit areas or where ANTI-FOG protection is necessary. Perfect on plastic or any glass eyewear. Science's latest discovery, and finest combined cleaning and anti-fogging fluid. Pressure-packed. Just touch the top and—PRESTO—the pressure can does the rest. About 1400 applications per can. Each can contains twice as much as old-fashioned 6-oz. bottles, and pressure packing makes it go twice as far. So, 1 MAGIC CAN EQUALS 4 SUCH BOTTLES. That is the first saving. No pump. Nothing to refill. No attachments.

Indestructible steel Dispenser locks can in place. No pilferage possible. This superior cabinet releases each sheet only 1-by-1, not in bunches, and greatly reduces waste.

The paper, not silicone-treated, is a superb, super-strong, wet-strength tissue. Naturally, no scratching on plastics, and no lint. Instead of a few sheets in little boxes, each Heavy-Duty carton contains 18 giant refills, and each refill has 760 jumbo-size interfolded sheets 8″ x 4¾″.

HEAVY-DUTY PRICES

Heavy-Duty Dispenser	@	$ 5.95
Carton Heavy-Duty Paper	@	11.60
Carton, twelve 12-oz. cans of pressure-packed Lens Cleaning & Anti-Fogging Fluid	@	12.50

All prices f.o.b our plants

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(For details, use Key # A-4 on card on page 71)

AT LAST!

A portable **Explosion-Proof** *industrial vacuum*

Designed for Complete Safety in Industrial Housekeeping in Hazardous Areas

● Here is the *first* industrial vacuum cleaner to combine portability, efficiency and *safety*.

Yes, its powerful ⅞ HP motor and all electrical fittings are explosion-proof . . . *completely* explosion-proof!

You can safely use this revolutionary wet-dry vac amid explosive gases, vapors, dust and in dozens of other situations where danger of explosion or fire had previously made use of a vac too risky.

It's ideal for cleaning floors, walls, overhead pipes, machinery or stock bins where there is grease, chemicals or other flammable materials. And since it works equally well for wet or dry pickup, it's just the thing for cleaning combustible material from storage tanks.

Mills and elevators, chemical plants, petroleum refineries, gas plants, and distilleries are just a few of the locations where this new explosion-proof vacuum is especially suited.

Pictured above is a pilot model of this sensational new vacuum cleaner which will soon be in mass production.

Its first public showing is tentatively scheduled for the PLANT MAINTENANCE SHOW. Look for it in Multi-Clean's Booth No. 632.

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Firm_____

Address_____

City_____ Zone____ State_____

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SAFETY MAINTENANCE & PRODUCTION

FORMERLY "SAFETY ENGINEERING"
EST. 1901

VOL. 109, NO. 1 **JANUARY, 1955**

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COVER PICTURE
By courtesy of E. I. Du Pont de Nemours & Co., Inc.

AMERICA'S PIONEER MAGAZINE IN ITS FIELD

SAFETY MAINTENANCE & PRODUCTION is indexed regularly by Engineering Index, Inc., New York

It's Safe to Say

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★ GRASS ROOTS SAFETY

WHEN THE EDITORIAL page of a monthly magazine "plugs" a television program, that comes under the head of news!

Over a major network there appears each week a program known by the succinct title of "Medic." Staged with a minimum of commercial fanfare and with flawless attention to detail and accuracy, "Medic" engenders tremendous respect for unsung heroes of the medical profession.

Just before the Christmas holidays the program dramatized with almost pulse-stopping fidelity the tragic results of mixing alcohol and gasoline on our streets and highways.

With an underkeyed, underplayed poignancy that tugged at the emotions, the story line portrayed a young secretary who was involved in a motor accident of dreadful consequences.

Using none of the ordinary, high-pitched theatricalism of the average program, "Medic" depicted the admission of a young girl into a hospital. Starting with an ambulance siren, proper mood was sustained through scenes in the emergency room, examination by the staff on duty, the injection of fluid to combat shock, the use of blood plasma and specialist consultations.

Avoiding any contrived approach to the sensationally gruesome or the artificiality of the average soap opera, Dow Chemical Company, sponsors of "Medic" captured with frightening realism the cause and effect of far too many motor vehicle accidents.

The resulting presentation therefore was able to create a more lasting impression than the hackneyed—"why did I do it?"

★ ★ ★

Wartime casualties and commercial air crashes are inherently dramatic. Thus they are able to grip the imagination and move the spectator beyond the power of words.

Accidents, whether industrial or motor vehicle, lend themselves to dramatization with dignity. Human eyesight sacrificed in a plant for want of proper eye protection is every whit as great a loss as blindness occurring on a battlefield. An arm or leg amputated after an industrial or highway accident is as crippling as the permanent injury suffered by a veteran in defense of his homeland. And the lump in the throat should be just as large.

Sheer force of numbers eventually can inure us to human suffering. It is high time therefore that a great national organization should find the means of bringing home direct to families and workers the folly of disregarding rules designed for safety against accidents in industry.

We can take comfort in the knowledge that injuries at work do not take anything like the aggregate toll exacted by vehicle accidents. Nevertheless they are too common despite the best efforts of safety leaders and top management. Taking chances on the job can be as dangerous as taking chances on the highways.

Dow Chemical Company is to be congratulated for its efforts to provide lasting food for thought in presenting the deeply moving consequences of unsafe driving. The time may soon come when a consistent program showing every phase of accident prevention will go into the living room of millions of American families. Perhaps then the fireside influence will carry the message of the safety crusade with appropriate emphasis exactly where it belongs—into the heart of the man on the job.—H. A.

A Safe, Prosperous and Happy New Year

Fact:

NEW "Package" Precipitron Features Movable Nozzle Washing and Adhesive Application

2,000 to 10,640 CFM – 12 SIZES – ONLY 38 INCHES LONG

Another "First" from the Sturtevant Division of Westinghouse—the Type PC Precipitron—it's the "packaged" unit you have been looking for. An outstanding addition to the most complete line of air handling and air cleaning apparatus.

This remarkable unit features movable nozzle washing—the only successful and practical method of mechanical washing – and power adhesive spraying with movable nozzles. This eliminates need to open the unit or apply adhesive by hand. It may be mounted on floor, platform or ceiling, has built-in drain pan facilities, after filters and complete enclosure, including duct flanges.

Service is easy. The PC Precipitron has either right or left hand access through the side panel.

This compact PC Precipitron is ideal for use with air handling or air conditioning units, particularly in hospitals, retail stores, libraries and office areas. Equally applicable to industrial process requirements.

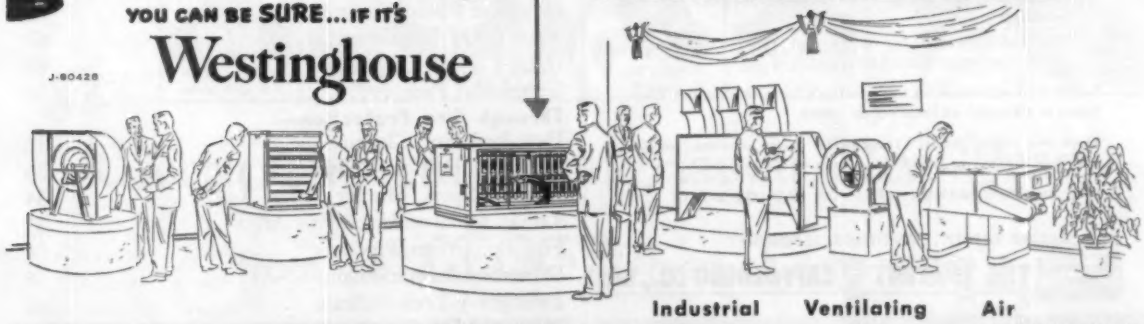
See this amazing unit at the A.S.H. & V.E. Show in Philadelphia. Or, call your Westinghouse-Sturtevant Sales Engineer . . . he is the "Man With The Facts" on air handling and electronic air cleaning.

Compact, easy-to-service PC Precipitron

WESTINGHOUSE AIR HANDLING

YOU CAN BE SURE... IF IT'S Westinghouse

J-80428

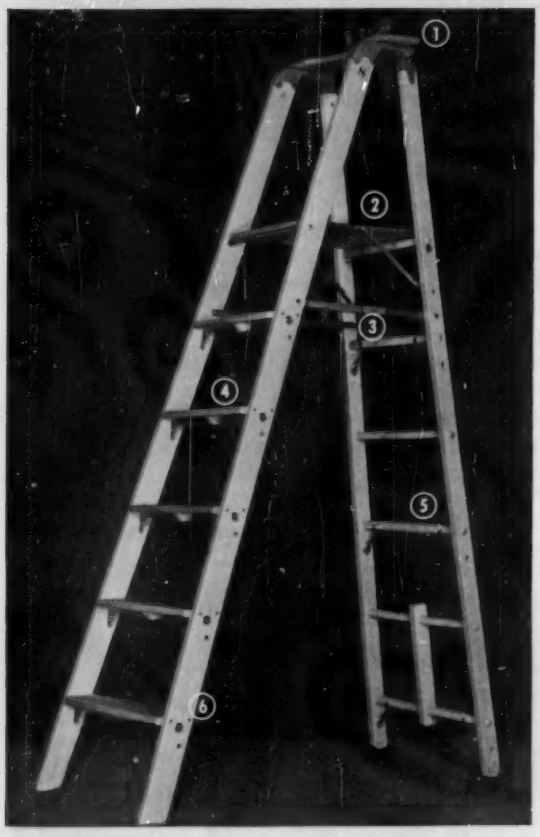


Silentvane Fan | Speedheater | PC Precipitron | Industrial Heater | Ventilating Set | Air Handling Unit

SEE IT AT THE A.S.H. & V.E. SHOW! January 24 thru 28, 1955 Here's where you'll find the new PC Precipitron, with its exclusive features. Booths 540-544.

(For details, use Key # A-6 on card on page 71)

This Ladder Will Reduce Accidents In Your Plant



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1. Top slotted for tool rack to prevent injury from fallen tools. (¾" x 7" x 18")
2. Large slatted platform (14" x 19") lets worker stand with hands free. Angle iron supports give extra strength.
3. Safety shield over spreader joints prevents pinched fingers.
4. Truss rods and knee braces under every step.
5. Sturdy 2-5/32" rungs provide safe support for an assistant.
6. Best ladder stock for front and rear rails. Heavy gauge hardware plated to resist rust.

Tested and approved by Underwriter's Laboratories, Inc. Conforms to ASA and all local safety codes.

There are "Gold Medal" Ladders for every purpose. Single, Step and Extension. Wood, Aluminum or Magnesium.

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May your pleasures be many, may your burdens be small...

That's the Holiday wish to you, from us all.

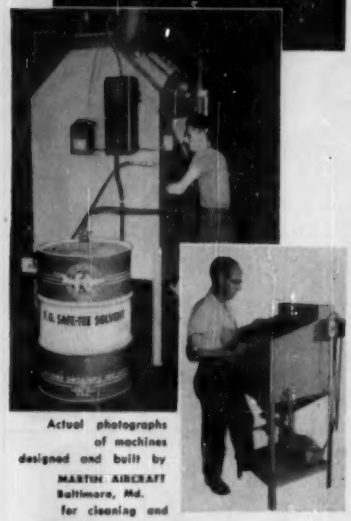
Merry Christmas and Happy New Year

from the LEGGE men of America

Walter G. LEGGE Company, Inc., 101 Park Ave., New York 17,

(For details, use Key # A-8 on card on page 71)

FINE ORGANICS' 'SAFE-TEE' SOLVENT
F.O. 128
GOES TO WORK FOR INDUSTRY



Actual photographs of machines designed and built by MARTIN AIRCRAFT Baltimore, Md. for cleaning and degreasing large and small parts with FO. 128

FINE ORGANICS is proud of the part it plays in helping THE MARTIN COMPANY perform an effective cleaning operation on both large and small parts. Many leading organizations are finding F.O. 128 not only a reliable cleaner but a decided factor in the elimination of personnel health hazards and wasted man hours.

SAFETY ENGINEERS

find the high flash point makes the use of this solvent desirable wherever fire hazards prevail.

INDUSTRIAL HYGIENISTS

recommend replacing Carbon Tetrachloride with F.O. 128. Low toxicity aids in avoiding harmful effects on personnel.

PLANT MAINTENANCE SUPERVISORS

appreciate the versatility of this fast, non-corrosive cleaning solvent. Ideal for heavy work, yet will not damage delicate machined surfaces or attack insulation. It is used effectively for cleaning and degreasing ELECTRIC MOTORS, POWER GENERATORS, CONDENSORS, STARTERS, PRODUCTION EQUIPMENT, and all areas in the plant where greasy, oily dirt has to be removed.

Write Dept. 'B' for information on our other Safe-Tee Solvents—and the name of your nearest F.O. representative.

Ask for our Technical Bulletin "How To Clean Electric Motors."

FINE ORGANICS, Inc.
211 East 19th St. · New York 3, N. Y.

(Use Key # A-9 on Inquiry Card on page 71)

THE FUTURE SHOWS

Chicago, Ill. *Jan. 24–27*

Sixth National Plant Maintenance and Engineering Show (International Amphitheatre). Clapp & Poliak, Inc., Show Management, 341 Madison Ave., New York 17, N. Y.

E. Lansing, Mich. *Feb. 14–17*

Fourth Annual Industrial Ventilation Conference (Michigan State College). James C. Barrett, Michigan Department of Health, Division of Occupational Health, Old Dewitt Road, Lansing 4, Mich.

New Orleans, La. *Feb. 27–Mar. 1*

Southern Safety Conference and Exposition (Jung Hotel). W. L. Groth, Executive Director, P. O. Box 8927, Richmond, Va.

Philadelphia, Pa. *March 8–9*

Twenty-first Annual Philadelphia Regional Safety and Fire Conference and Exhibit (Broadwood Hotel). Walter W. Matthews, Managing Director, Philadelphia Safety Council, 17th & Sansom Streets, Philadelphia 3, Pa.

Houston, Texas *March 21–22*

Sixteenth Annual Texas Safety Conference (Rice Hotel). J. O. Musick, General Manager, Texas Safety Association, Inc., 830 Littlefield Bldg., Austin, Texas.

Pittsburgh, Pa. *March 29–31*

Thirtieth Annual Western Pennsylvania Safety Engineering Conference & Exhibit (Hotel William Penn). H. H. Brainerd, exec. manager, 605 Park Bldg., Pittsburgh 22, Pa.

Indianapolis, Ind. *March 30–31*

Eighth Central Indiana Safety Conference & Exhibit (Claypool Hotel). Indianapolis Safety Council, 320 N. Meridian St., Indianapolis, Ind.

Kansas City, Mo. *March 31–April 1*

Central States Safety Congress (Municipal Auditorium). George M. Burns, Director, Kansas City Safety Council, 419 Dwight Bldg., Kansas City 6, Mo.

New York, N. Y. *April 11–15*

Twenty-fifth Annual Greater New York Safety & Exposition (Hotel Statler). Harold C. Mesch, general chairman, Greater New York Safety Council, Inc., 60 E. 42nd St., New York 17, N. Y.

Niagara Falls, N. Y. *April 19–21*

Fifteenth Annual Western New York Safety Conference, in cooperation with the American Society of Safety Engineers (Niagara Hotel). Patsy E. Gismondi, Executive Secretary, 1436 Delaware Ave., Buffalo 9, N. Y.

Cleveland, Ohio *April 26–28*

Twenty-fifth Annual All Ohio Safety Congress & Exhibit (Hotels Cleveland and Hollenden). A. W. Moon, Congress Manager, Industrial Commission of Ohio, Safety & Hygiene Div., Columbus 15, Ohio.

Grand Rapids, Mich. *April 26–28*

Twenty-fifth Annual Michigan Safety Conference (Pantlind Hotel and Civic Auditorium). R. H. Goring, Executive Secretary, Michigan Bell Telephone Co., Detroit, Mich.

Chicago, Ill. *May 16–20*

Materials Handling Exposition (International Amphitheatre). Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Winston-Salem, N. C. *May 18–20*

Twenty-fifth Annual North Carolina Statewide Industrial Safety Conference (Robert E. Lee Hotel). H. S. Baucom, Safety Director, North Carolina Industrial Commission, Raleigh, N. C.

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SAFETY—SERVICE AND STYLE

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15-18-21-Irons—Blk and Brown

A soft flexible step with day-long comfort

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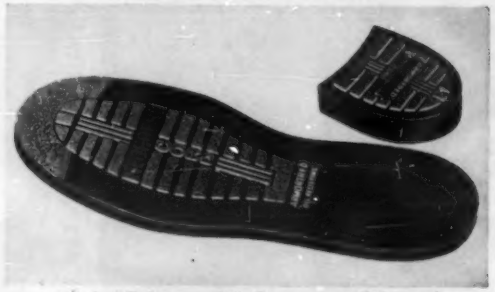

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FOR—EXTRA MILES OF SAFE SERVICE

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New! WELDING GOGGLES

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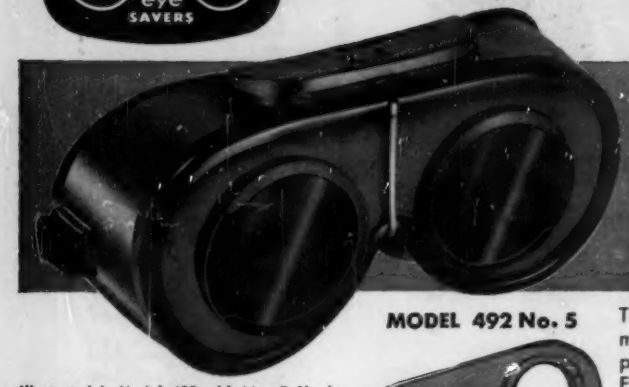

MODEL 492 STAC-VENT

Furnished with replaceable 50 mm round Federal Specification, glass filter lenses No. 3, 4, 5 or 6 shades . . . protected both sides by .020" thick hard plastic cover lenses.

MODEL 492 No. 5

Illustrated is Model 492 with No. 5 Shade perfectly matched glass filter lenses. Lens Holder (right) is of heavy flexible opaque plastic with lens pockets which hold lenses tight in perfect position for best vision. Lenses are easily removed and replaced. A Position Lock Bar secures lens holder in frame.

Eye-Savers perfectly matched lenses are Standard 50 mm Federal Specification Glass Filters available in shades No. 3, 4, 5 or 6. Hard plastic cover lenses .020" thick protect the glass filters and wearer inside and out. Outside cover lens is easily changed without disturbing the lenses.

The New Light-Tight STAC-VENT ventilation which drafts-off moist air from inside the goggle to eliminate fogging now permits adaptation of these modern, safer soft vinyl frame Eye Savers to welding applications.

SAFER because the soft vinyl form-fits comfortably to the contours of the face and nose — closing all gaps.

MORE COMFORTABLE because of light weight and soft fit next to the skin and because cover goggle design provides easier vision.

MORE FLEXIBLE because lenses are easily changed or replaced, because lens holder is easily replaced. And Stac-Vent Eye Savers are wide enough to fit over the largest prescription frames.

FOR STAND-BY PROTECTION IN ARC WELDING AREAS

MODEL 490 STAC-VENT

Opaque black, soft vinyl frame furnished with replaceable (interchangeable with lens holder) medium green (G3) or dark green (G5) methacrylate lens. These lenses are shatterproof, will not pit, and will resist heavy impact (.080" thick). Methacrylate Eye Savers lenses absorb sufficient infra-red and ultra-violet rays to provide protection in arc welding areas but not for direct arc welding. Also sufficient to provide full protection from the less intense glare of gas welding or cutting. Lightweight — Comfortable — Low Cost Protection.

MODEL 490 — G5

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(For details, use Key # A-11 on card on page 71)

We've found that it's been a big help to...

INVESTIGATE MINOR ACCIDENTS

By KEITH L. PURCELL
Asst. Safety Mgr.
Caterpillar Tractor Company
Peoria, Illinois

EXPERIENCE HAS TAUGHT our company that investigation of the causes of accidents has been one of the main tools of our accident prevention program. The basic cause of an accident may or may not be responsible for an injury, but, if it is responsible for an injury, it may be a serious or very minor one.

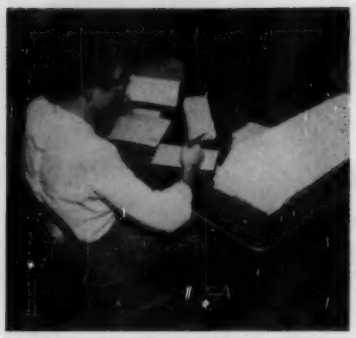
The extent of the injury, therefore, is a matter of degree. It follows that if we investigate injuries of only a serious nature, we are automatically turning down the opportunity to study the greater bulk of the causes. I frankly believe that like an iceberg, hazards investigated are only the smaller part of existing hazards.

It then follows that the real opportunity should lie in the area of accidents causing minor injuries or accidents causing no injury at all. (I realize that these accidents are the most difficult to locate because employees do not feel the necessity of reporting an accident unless it breaks or destroys equipment or property, or causes an injury.)

The only practical approach to this problem is one of investigating every reportable accident and injury. Our company has, over the past 10 years, investigated ALL first aid injuries, that is, injuries involving only treatment by the medical division. We have also investigated some cases of non-occupational illness to rule in or out, the possibility of an occupational disease factor.

Before going too much further, let's clarify what we are really attempting to do. We frankly, are not or should not be investigating injuries. I think this is a medical problem. Also, we are not, in a sense, investigating accidents. I don't think this is really our objective.

In my opinion, our prime objective is to investigate the causes of all accidents that occur and to that end we have devoted a great deal more time in our company than is normally spent by many similar types of industries. We have discovered that in order to eliminate personal injury, we must (1) establish the cause of an injury; (2) determine



First aid cards are kept with injury, medical, and investigator's report tabulated on them.

Investigators work closely with well-equipped medical staff. Here foot gets examination.

A Safety Investigator checks an overhead crane for any possibly unsafe conditions.

whether it is personal error or machine failure; and, (3) discover whether proper instructions have been given to the employee when placed on a job.

After these facts have been determined, we are in a position to recommend that action be taken by operating personnel. If we are to investigate these accidents properly, we must have a highly trained safety investigator.

The investigator must have a wide knowledge of the shop operation, particularly of the area in the shop to which he has been assigned. He must be familiar with the state health and safety codes and with all company policies. He must be trained to write intelligent reports, so that the information that he gathers may be transmitted in clear, concise language to the operational department. Then they, too, will have a clear understanding as to the cause and possible action to eliminate future accidents.

Informed on All Accidents

If we are to achieve our objective, we recognize that by some means we must be informed on all first aid cases and all accidents which fail to involve personal injury. If an employee is injured to the extent that he requires medical treatment, it is easy to be aware of the injury.

This is accomplished by a system of first aid cards which are picked up at the start of each shift by the investigator assigned to an area. The investigator can then go to the work location of the injured employee; and, in the presence of the injured employee and his supervisor, gather all the necessary information regarding the accident. This information is carefully recorded and filed for future reference by the safety division.

If an accident occurs which does not involve personal injury, but machine breakage, tool spoilage or scrap material, then we are generally informed of this either by letter or by word of mouth from the operating personnel. If neither an injury nor damaged equipment results from an accident, this poses rather a serious problem for becoming aware of the accident.

For this reason, investigators in our plant travel throughout the shop during each shift so they can come upon these conditions and be able to make investigations and suggestions for correction.

Steady Injury Decline

Since this program was started, we have experienced a steady decline in the number of actual first aid cases. This has, we feel, resulted in a steady decrease in the number of lost time cases at our plant. It has been our experience that we will have approximately 1 lost time case for each 500 first aid visits. We know that if we have a reduction in first aid cases then the potential for lost time cases and fatalities has been greatly reduced which, after all, is our main objective.

We have experienced many cases where an injured employee has failed to report to a first aid station and receive necessary medical treatment; either because he did not know that he should report every injury, or because he felt that his case did not merit medical treatment. In many cases these same employees have taken their injury to their own personal physician and have received treatment; then have asked the company to bear the cost of this treatment.

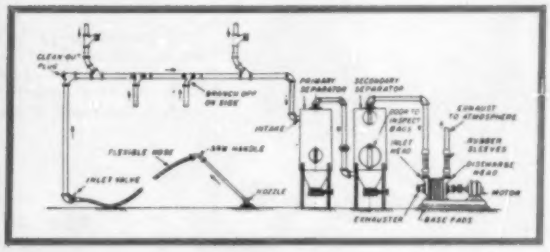
We have found that by complete investigation of all cases, particularly those of the last mentioned variety, we have assisted in determining whether or not an employee was actually injured while in the plant.

Reopened Cases

We have had many cases where an employee had received a minor injury and was treated by our medical division. The cases have been considered closed, but several months later were reopened and claims made by the employee upon the company for medical treatment. Because of the thorough and complete investigation conducted by the safety investigator the history of the

(Continued on page 38)

Workman recovers coal from wind boxes in one third of time required by old method. Hose connects to central vacuum system which also is used to remove fly ash and clean up.



THIS CENTRAL VACUUM SYSTEM . . .

✓ **Recovers Coal**

✓ **Removes Fly Ash**

✓ **Cleans Up Quickly**

BY USING AN INDUSTRIAL VERSION of the household vacuum cleaner power plant engineers at Clifton Paperboard Company have cut hours each week from the usually laborious and time-consuming job of recovering unused coal from their boilers. Their central vacuum system does double duty by cleaning fly ash from the boilers—in less than half the time formerly needed.

The plant operates 4 large boilers (total 3300 hp), which are fired with coal fed from hoppers on to chain grate stokers. During the course of a week, 2 to 3 tons of fine coal slip through the 21-foot wide chain grates and collect in the wind box. About once a week the coal is recovered from the wind box; ashes from the fire bed fall into another section of the boiler.

Formerly, the coal was recovered by using a long handled hoe to scrape the coal from the wind box out on to the boiler room floor. Because of the 4-to-9 foot clearance between the boiler housing and the building wall, the 16-foot hoe handle was constructed in several sections connected by threaded joints. This meant that each time the hoe was pulled out of the wind box, the handle had to be partially dismantled, and then reassembled to reach into the boiler again. The recovered coal would be shoveled into a wheelbarrow and taken, one load at a time, to the coal yard where it would eventually be shoveled into a coal elevator for return to the hoppers. As a result, 6 men spent nearly a full day each week to remove the coal from the 31 wind boxes and return it to the feed hoppers.

The company now has in its boiler room a central vacuum cleaning unit to take over the job of coal recovery. Now the process not only is cleaner and more convenient, but also saves time in amounts well worth reckoning. The job that once took 48 man-hours is now accomplished by 3 men in 5 to 6 hours, a labor saving of better than 60 percent.

How It Works

Here's how the system works. A vacuum (9 inch mercury) is created by a 790-cfm blower, and is carried in a 5-inch diameter pipe to various locations in the boiler room. Hinged caps in the pipe enable workers to connect a flexible-hose-and-nozzle assembly into the vacuum virtually anywhere in the boiler room. A pair of hoppers is installed on the vacuum side of the ex-

(Continued on page 40)

In protected spray booth and armed with modern spray gun, painter applies coat of new detergent-resistant enamel to washing machine top made of glass fiber.

By R. T. UBBEN
Technical Coordinator, Paint Division
Pittsburgh Plate Glass Company
Pittsburgh, Pennsylvania

BUILDING & EQUIPMENT MAINTENANCE SERIES
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PROGRESS IN PROTECTIVE

SINCE THE close of World War II the real impact of chemical progress has made itself felt upon the protective coatings industry. Substantial improvements have been made in many prewar coatings.

Alkyd resins, for example, are being used more extensively for many types of coatings where advantage is being taken of improvements in color, drying time, durability, etc. A host of new chemicals, which can be adapted to the alkyd resin reaction, is being used to upgrade the quality of alkyds. Refinement in the manufacture of fatty acids results in improved film properties of the alkyds in which they are used. Styrenation of alkyds has resulted in a completely new concept of "quick drying enamels," which are not only faster drying but, also possess excellent wearability.

One of the specific fields of finishing where very real progress has been made is the finishing of appliances. The advent and almost universal usage of soapless detergents, which have a much more stringent effect on organic coatings than previous soaps, make it necessary that enamel finishes for machines and other areas which are cleaned in this way be made to withstand these new washing compounds.

Improvements in alkyd resins and in their compatibility with urea and melamine resins were very helpful in this direction, but it was the development and commercial production of a new class of epoxy type resins that made possible the development of satisfactory coatings. It is true that this successful application of epon resins in coatings for appliances has led to their use in other types of coatings. Epons, when properly formulated and cured, produce films of exceptional and unique resistance to many corrosive and hydrolytic agents. They are particularly useful in baked primers where their slight tendency toward yellowing is not too objectionable. Catalyzed or air-cured epon finishes are finding increasing application as maintenance paints in chemical and industrial plants, but it must be stated that air-cured or catalyzed epon finishes do not possess the outstanding properties which characterize the baked films.

Somewhat of a revolution in the protective coating industry has taken place in the past few years with the development of water-thinned or latex paints for maintenance uses. Most water-thinned paints are based on synthetic rubber emulsions which

BELOW—top—Metal furniture parts are being dip-coated in this picture with a special enamel which resists scratches.

BELOW—center—Coating machine operator removes tube and places another on bar which comes in contact with paint roll. Enamel-coating is then baked on finished tubes. Other paints can be applied later.

BELOW—bottom—Metal file boxes move along through paint spray booth in assembly-line fashion. Enamel is then baked on for solid finish. Note good lighting and ventilation, making otherwise dangerous operations safe.

PAINTS

were developed during World War II and have replaced a fair percentage of oil and varnish type paint for interior wall finishing. The "do-it-yourself" movement has aided the popularity of these odorless, easy-to-apply and easy-to-clean-up-after wall paints, and the black mark which formerly attached itself to "water paints" has completely disappeared. One must even recognize the possible spread of water-thinned finishes for other applications. For example, their use as exterior finishes for masonry is expanding on the West Coast and in Florida and some industrial applications are being developed.

The advent of each new or distinctive development invariably stimulates efforts toward improvement of

(Continued on page 30)

ALUMINIZED CLOTHING...

LEFT—Workman removes cherry-red processed castings from annealing furnace. With visor protected face and reflecting aluminized clothing he is able to stand the heat. Light weight of clothing also adds comfort to his "summer" job.

OPPOSITE PAGE—Garbed in aluminized clothing from gloves and hat to pants and coat, this man is reaching over an annealing furnace which is red hot, yet he says job is cool with light new clothing.

To Give Heat the Bounce!

A PROBLEM AS OLD AS the blast furnace is that of protecting men against extreme heat on the job. Without adequate protection, they cannot get close enough to their work to perform their tasks effectively and safely. And the problem of selecting the right protective clothing, and getting the men to wear it, is at least as old as the safety engineer, and one of his biggest headaches.

Both of these problems are related closely to the development of better protective devices and materials with which to make them.

The standard solution to the heat protection problem has been the use of asbestos clothing, often with a wool backing, to prevent burns and the debilitating effects of heat. This type of clothing has worked within the limits of the material with which it is made.

Asbestos, being practically fireproof, prevents burns in many instances, provided it is thick enough. It is also a fairly heavy material, so that a garment made from it must also be fairly heavy to serve its purpose. However, it is a conductor of heat, with the result that a man wearing it is safe against burns but is not insulated against heat. For long exposures to heat, therefore, an insulative backing is necessary. That means still more weight.

This leads to another problem in actual practice: Men provided with heavy safety clothing will occasionally take a chance on not wearing it.

The Search

Safety men have long looked for a type of garment with an outer coating of reflective material which could throw back the heat. This

way, protective clothing could be thinner and lighter in weight. It would not have to be as highly insulative, since heat would not penetrate into and through the cloth to as great a degree. It is known that aluminum reflects 90 percent of radiated heat. If it could be utilized in protective clothing, it could provide the ideal solution to the problem, safety men reasoned.

Many attempts have been made, both by safety clothing manufacturers and safety engineers in the field. Spraying conventional-type garments with aluminum paint gave some added protection, but this method proved unsatisfactory and was abandoned.

Attempts were also made to bond a layer of aluminum to cloth under heat and pressure. Results were much better than with the sprayed paint, but the metallic layer was thick, the fabric stiff, and still too heavy. This fabric also breaks down under working conditions.

But a method was finally found in which the aluminum is deposited on the fabric in a very thin layer and securely bonded. Garments made of it give better protection than the conventional type, are lighter by half, and are readily flexible. They also last longer and are more resistant to wear by abrasion. Under conditions where other types of clothing normally last from 3 to 4 weeks, aluminized garments last up to 6 weeks.

How much more resistant to heat this cloth is over non-aluminized cloth is shown in the accompanying chart. The temperature behind aluminized asbestos exposed to a given level of heat begins to level off at the same time as the untreated cloth, but about 200 degrees lower. In the case of cotton duck, the leveling off time for the treated fabric occurs at about the same time as the untreated cloth ignites.

The chart also shows that aluminized duck is actually more resistant to heat than the aluminized asbestos cloth. As mentioned previously, asbestos is a conductor of heat, and duck is much less so. The superiority of the aluminized duck in reflecting and protecting against heat makes it entirely adequate for jobs where radiant heat alone is the problem. But where there is a risk of spatter from molten metal, the protection of asbestos is essential.

Aluminized clothing is still a fairly recent development, and has been produced in quantity for only a short time. It cannot yet be judged on a long term basis, but initial results have been impressive. In slagging operations, coking, and the handling of white-hot ingots it has effected some startling economies. In most operations where the heat is so intense that two men must take turns to do a single operation, spelling each other when the heat becomes too intense for conventional heat protection equipment, one man with aluminized clothing can stay long enough to complete the operation alone. Also, in unusual circumstances when an obstacle is encountered that prolongs exposure to heat, a man wearing aluminized clothing can stay for far longer periods without losing time to cool off before the job is finished.

Workers, when first introduced to aluminized garments, are usually skeptical. They are not convinced that clothing which weighs half as much as what they are used to will protect them. But experience proves that they accept with confidence after the first trial, and are sold on both the safety and also the comfort and freedom of movement afforded.

Picture, chart and text material in cooperation with American Optical Co.

ALUMINIZED FABRIC VERSUS PLAIN FABRIC

critical observations of fabric conditions on exposure at various temperatures

(MAXIMUM EXPOSURE: 600 SEC.)

OBSERVATION CODE

A—No visible change
B—Scorch—discoloration
C—Slight Char—weakened
D—Char—blackened—no strength
E—Char—Glow and hole opened
F—Open flame

SECONDS EXPOSURE & OBSERVATION AT VARIOUS TEMPERATURES

Fabric placed 4 inches from heat source. Source Temperature—°F

FABRIC	1500°	1800°	2000°	2200°	2400°	2600°	2800°	3000°
2# Herringbone Asbestos								
ALUMINIZED	600A	600A	600A	600B	600C	300C	60E	45E
PLAIN	300B	60C	30C	20C	15C	5F	4F	—
10-Ounce Cotton Duck (flameproofed)								
ALUMINIZED	600A	600B	600B	90C	55E	30E	25E	22E
PLAIN	90E	70E	22E	12F	8F	4F	—	—

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(For details, use Key # A-12 on card on page 71)

HAZEL CAME . . .

THE ROOF WENT . . .

BUT THE WINDOWS STAYED!

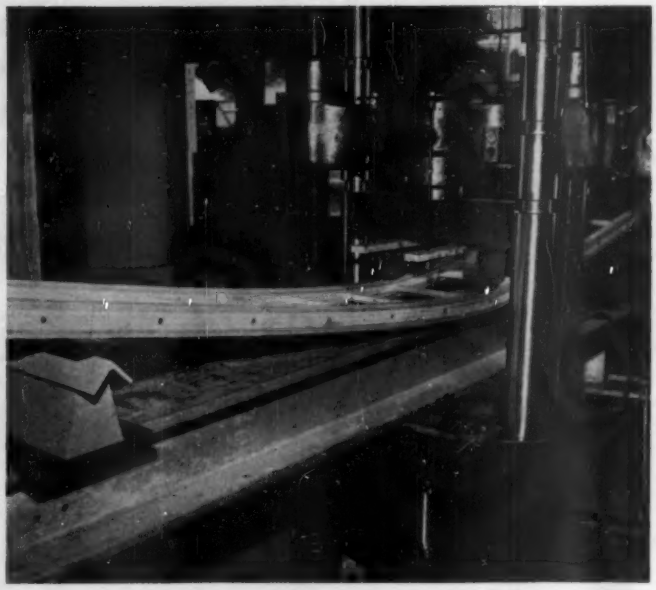
AFTER—The hurricane has struck and ripped the roof off this plant building—but the window is still intact. In fact, even windows hurled many feet stayed unbroken.

BEFORE—Acrylic plastic window throws light into plant building. Roof is firmly in place.

IT MAY BE SMALL comfort to the Keystone Refining Company, but when hurricane Hazel hit their Philadelphia plant a few months ago, it proved one thing—their acrylic plastic windows stood up to the big wind without loss of a pane. Small comfort, we say, because the plant walls and roof didn't fare so well. As you can see in the pictures above, parts of the roof were blown off and the walls suffered also. The hurricane, instead of blowing out the windows from the walls, reversed the process and blew the walls from around the windows!

Of course, it must be admitted that one pane was lost when part

(Continued on page 32)



Picture shows testing machine applying pressure to laminated ladder which is still bending without any sudden shearing.

By H. L. VON HOHENLEITEN
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Baltimore, Maryland

WHAT DO WE KNOW ABOUT

CONSTANT IMPROVEMENTS are being sought in wood ladders. When a ladder is in use it generally means that a human being is entrusting himself to its support far above ground. The danger of a serious injury from a fall is such that ladders must have the highest safety factor possible.

Metal ladders as well as wooden ladders have their place in industry, transportation, and commerce, but the problem of improving wooden ladders has been that of imparting additional strength and safety while maintaining the desirable properties of wood and keeping the weight practically constant. With recent improvements in glue laminating techniques and past research on composite or sandwich construction, a recent solution to the problem appears to researchers to be the use of several varieties of wood together in ladder rails. Recent laboratory tests of ladder rails made of various combinations of woods seem to indicate that laminated composite beams, especially those of more than two species of wood, are superior to solid beams for industrial ladder rails.

Reason for Tests

The reason for these tests with laminated wood ladders is that, while wood has several inherent properties which make it one of the most satisfactory and safest of materials for ladder construction, it has two weaknesses which need correction: solid wood rail ladders have comparatively greater weight and a tendency to fail suddenly and unexpectedly under apparently normal service conditions. Some of the outstanding qualities of wooden ladders, on the other hand, are: (a) low cost; (b) great impact strength; (c) comparatively little tendency to sway, especially important in the case of long ladders; (d) good electrical insulating properties, so ladders can be used with a reasonable degree of safety near electric lines; (e) strength properties not too greatly affected by varying degrees of temperature.

In combating wood's tendency to greater weight and sudden failure, the recent tests referred to above have found that composite beams which are fabricated with lighter wood centers exhibit a very high strength-weight ratio. According to these tests this is because the outer layers carry the major stresses both in tension and compression, while the weight is reduced to a minimum by the light central core.

Selecting the right type of wood to use in composite construction depends on several factors. The chief requisite of the face material is high strength and tension and compression parallel to the grain. The most important property of the core material is lightness, although a high shear strength parallel to the grain is desirable. Also, the two or more varieties of wood making up the composite should have as nearly similar shrinkage and swelling properties as possible, good gluing qualities and be readily available.

Consideration of these last factors lead to the selection of greenheart, true hickory, black walnut, and pecan-hickory as preferred face mate-

TABLE I

Weight and Strength of Solid Spruce and Composite Rail Ladders [1]

Type of ladder rail	Rails Thickness	Rails Depth	Total Weight of Ladder	Total Load to failure [2]	Modulus of Rupture
	Inches	Inches	Pounds	Pounds	Psi
Solid Spruce	1.5	4	40	1940	10,200
Solid Spruce	1.5	3 5/8	35	1580	10,200
Solid Spruce	1.5	3 5/16	30	1310	10,200
1/8" Greenheart Composite	1.5 [3]	3 5/8	40	2300	14,750
1/4" Greenheart Composite	1.5	3 7/8	44	3080	17,400
1/4" Greenheart Composite	1.5	3 5/8	42	2800	17,900
1/4" Greenheart Composite	1.5	3 5/16	40	2380	18,300
3/8" Hickory–1/8" Oak Composite	1.5	3 5/16	40	2240	17,100
3/8" Hickory–1/4" Oak Composite	1.5	3 5/8	44	2670	17,000
3/8" Hickory–1/4" Oak Composite	1.5	3 5/16	41	2250	17,200

[1] All computations based on the following:
(a) Wood at a moisture content of 12 percent
(b) Length of rails—14 feet
(c) Length of hickory rungs—14 inches
[2] Concentrated center load perpendicular to rungs over 14-foot span
[3] All composites consist of tension and compression flanges of thickness specified with Port Orford cedar core.

LAMINATED WOOD LADDERS?

rials, and Port Orford cedar and Sitka spruce as core materials, for the tests referred to above. In order to reduce the abrupt change in strength between the outside faces and core materials of the ladder rails, inherent in combinations of two varieties of wood, rails were made with a third variety of wood of intermediate strength between the core and face woods. The tests subsequently showed that this technique prevented sudden ladder failure.

First the Theory

Researchers determined the theoretical weight and strength of ladders with solid spruce rails as well as of ladders with composite rails of various combinations of greenheart-Port Orford cedar and hickory-red oak-Port Orford cedar. The solid spruce rails were used simply as a yardstick to measure the performance of the laminated rails. The results of these computations are shown in Table I. As shown in the table, hickory-oak Port Orford cedar composites carry about 15 percent, and 1/8 inch greenheart-Port Orford cedar composites about 19 percent more load than perfectly clear and straight grained solid beam ladders of equal weight. On the basis of equal dimensions, however, the hickory-oak composites carry about 42 percent, and the 1/8 inch greenheart composites about 45 percent more load.

In using laminated wood ladders a problem is raised by the fact that industrial ladders see all kinds of service and storing, including occasional high temperature in the case of fire ladders. This makes waterproof and durable wood glue necessary in ladder construction. Laminated ladders tested in these investigations were made with phenol-resorcinol-formaldehyde adhesive. This type of adhesive produces glue bonds of extreme durability, which tests have shown will withstand prolonged exposure to cold or hot water, alternate wetting and drying, and exposure to alternating humidity changes. It is also inert to heat at temperatures well above those at which wood chars.

Static bending tests were performed on the solid beam and composite beam ladder rails to test the reliability of the estimates made in Table I. The results of these tests, when adjusted for the greater moisture content of the test specimens and the fact that the theoretical determinations did not account for the imperfections found in the larger test beams, confirmed the theoretical estimates shown in Table I.

Then Strength Tests

The test results also showed that while solid spruce rails failed suddenly and completely in brash horizontal shear without giving the slightest warning, ladders with greenheart composite rails carried their maximum load for a short period and gave at least one sound warning shortly before failure occurred.

The hickory-oak-cedar composite ladders gave several loud sound warnings near the ultimate load and continued to carry load after initial failure for a long period of time. In some instances, additional load

was taken up even after sound warnings gave evidence of initial failure. Composites in which Sitka spruce was used as core material failed more abruptly than those in which Port Orford cedar was used. In these composites, the major type of failure was brash horizontal shear.

The tests indicated to researchers that ladders made with composite rails were superior to ladders with solid beam rails: (a) in strength: (b) in stiffness: (c) in higher strength-weight ratios. In addition they show other excellent qualities such as: (a) an ability to absorb more work to failure: (b) an ability to carry large loads for long periods beyond initial failure: (c) an ability to give distinct sound warnings as failure progressed gradually: and, (d) a freedom from horizontal shear failure, which is the usual cause of complete destruction in other types of wood beams.

Previous studies have indicated that unexpected ladder failure occurs in most cases because of invisible compression failures present before the ladders were finally broken. The composite laminated wood ladders produce progressive tension failures which, since they show splintered wood fibers, are easily recognized by the layman in contrast to compression failures which may be easily overlooked. The three-wood-varieties type of laminated composite rails appears to be especially well suited for industrial ladder use because, in case of failure, a man working on one is not suddenly deprived of his support and has enough time to get off the ladder before it breaks completely.

More Research in Progress

Of course, it is not intended to imply that the combinations of different types of wood and the respective thicknesses in laminated ladders used in these tests represent the best in composite ladder construction. Further work to determine the merits of other combinations is still being carried on.

Picture and chart by courtesy of Engineering and Laminating Corp.

"Safety Maintenance" Salutes A SAFETY IDEA

"Two-Eyed" Control Replaces Electric Eye

AN AUTOMATIC SAFETY control so modern it makes photoelectric cells old-fashioned is part of a new boiler installation completed recently at the Falstaff Brewing Corporation's Omaha plant.

Nick-named "scanner," the new safety shut-off control contains selenium sulfide, a highly sensitive metal compound which is "two eyed" in that it can "see" either gas or oil flames, according to Fred H. Drehsen, chief engineer at the plant. If, for any reason, the flame in the boiler is extinguished, the safety control automatically shuts off the fuel supply. The firm's boilers can be operated on either gas or oil but during severe winter weather, when more gas is needed for residential heating, the firm uses oil.

Formerly separate shut-off controls were needed for both fuels. A sensitive thermocouple, which occasionally had to be replaced, monitored the less luminous gas flame, and photoelectric cells had to be used to observe the oil flame. Now, however, the selenium sulphide compound makes the single control "two-eyed."

Among other safety features on the new plant boiler are other automatic controls which shut off the fuel supply in case of either excessive pressure or low water supply.

Picture by courtesy of Falstaff Brewing Corp.

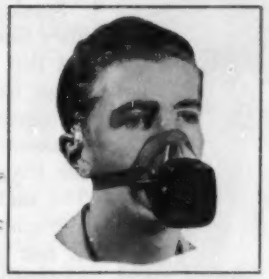
*M.S.A. DUSTFOE #55—Lightweight breathing protection against dusts not significantly more toxic than lead.

*M.S.A. COMFO METAL FUME—Effective protection against harmful fumes from molten or heated metals.

*M.S.A. COMPACT COMFO—Twin-filters remove fibrosis-producing and toxic dusts such as asbestos, aluminum, silica.

M.S.A. COMFO ULTRA-FILTER—99.9% efficiency against radioactive dusts, particulate more toxic than lead.

*M.S.A. COMFO CHEMICAL CARTRIDGE—For light concentrations of gaseous matter; particulate matter with filter.

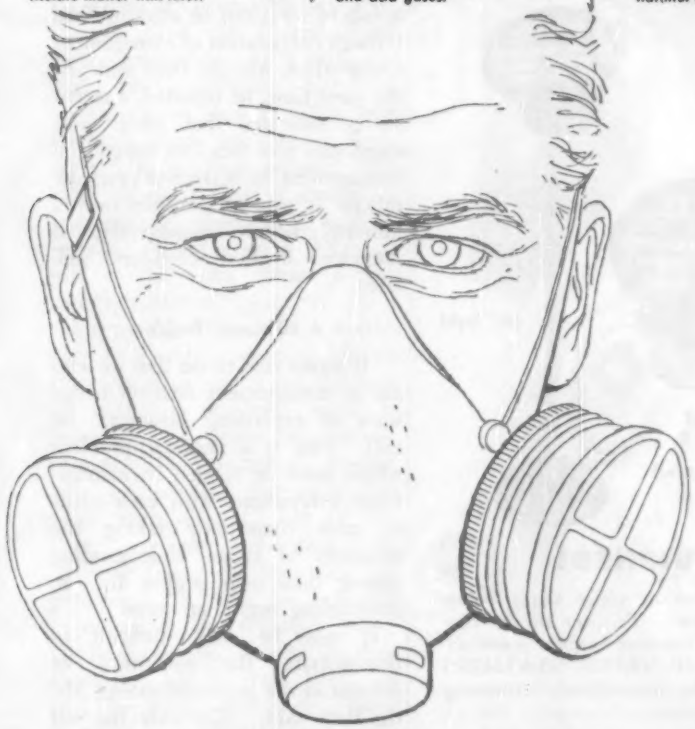


M.S.A. GASFOE—Chemical cartridge protection against light concentrations of organic vapors, and acid gases.

*M.S.A. AIR LINE—Complete, versatile protection in any atmosphere that is not immediately harmful to life.

M.S.A. PROTECTIVE HOODS—A variety of dust and paint hoods made of Dynel cloth or Vinyl plastic.

* U.S. Bureau of Mines Approved



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The variety of respirators described above will give you an idea of our complete line. At M.S.A., you can satisfy your specific requirements for breathing protection . . . get the respirator that's right for the job.

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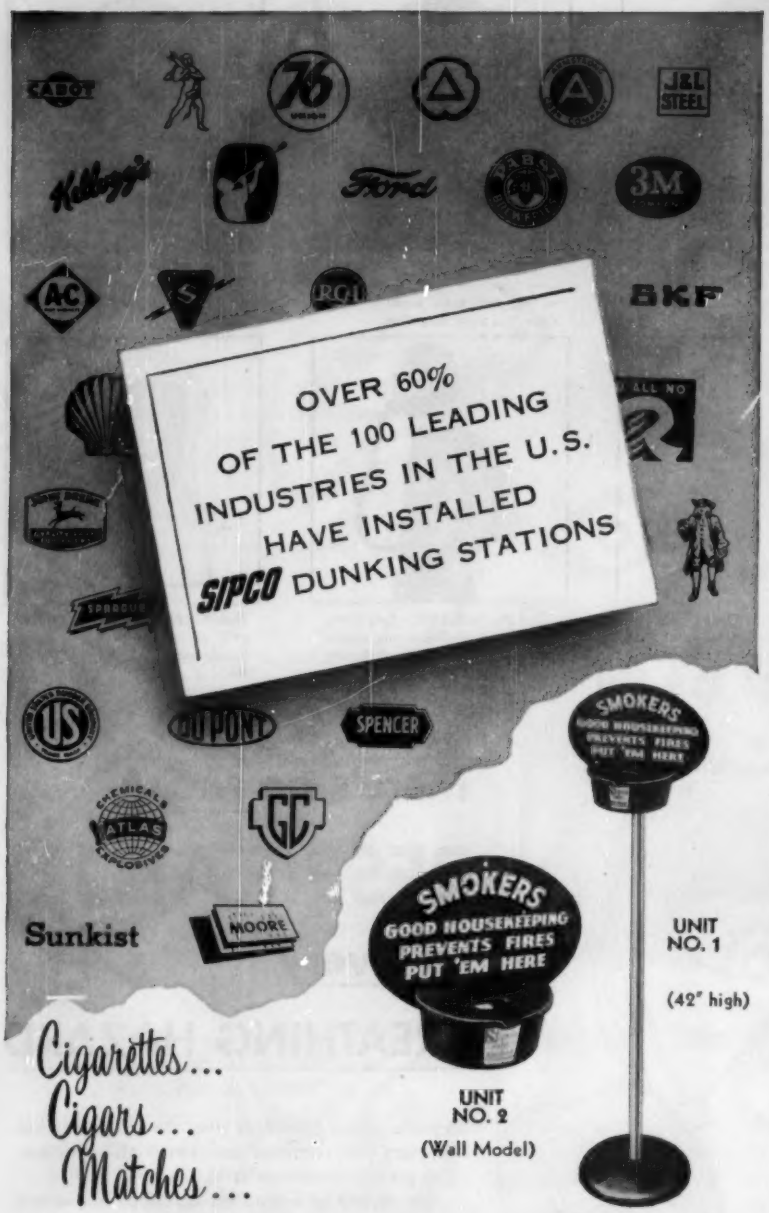
Cable Address: "MINSAF" Pittsburgh

(For details, use Key # A-13 on card on page 71)



IMMEDIATELY EXTINGUISHED!

It's not the cigarette or cigar that's being smoked that causes fires — it's after they're discarded and forgotten that they become a serious fire hazard! SIPCO DUNKING STATIONS end this fire hazard by immediately drowning every last dangerous spark.

Why not rid your plant of smoldering fire hazards by installing SIPCO DUNKING STATIONS. They are built for heavy industrial use and abuse — are attractive — economical — the perfect solution to your plant smoking problem.

WRITE DEPT. O FOR DESCRIPTIVE LITERATURE

"Sparky" reproduced through courtesy of N.F.P.A.

SIPCO STANDARD INDUSTRIAL PRODUCTS CO.
116 SO. GARFIELD AVE. PEORIA, ILLINOIS

(For details, use Key # A-14 on card on page 71)

Safety, Production and Economics

THE ECONOMIC well-being of employees is inseparable from that of management and full understanding of this fact is vital to the strength of the nation, according to Emile F. du Pont, director of the Employee Relations Department of the Du Pont Company.

Speaking at the 27th Maine State Safety Conference, he pointed out that the industrial safety campaign has been successful because management has been able to demonstrate a mutual interest in the physical welfare of employees. The mutual interest in the economic sphere may not be as apparent at first glance and "this is where understanding is needed in industry." The outstanding improvement in industrial safety is an example of what can be accomplished through cooperation of management and workers, Mr. du Pont said. At the same time, he reported, a recent survey indicated that while most employees feel they can depend on management to make working conditions as safe as possible, only a minority believe management is interested in their economic welfare.

A National Problem

"It seems vital to me that we who are in management develop better ways of explaining business," he said. This is a national problem which must be tackled by management everywhere, with each plant in each community taking the initiative to create understanding among their own people, for understanding begins at home.

It may be more difficult to demonstrate the mutuality of interest in the economic sphere, Mr. du Pont said. "Certainly the self interest of the worker in the profitable operations of his company may not seem so apparent at first glance as his self interest in better safety. Yet even where management and employees disagree over how the rewards of production should be shared, it should be obvious that

greater production would provide larger shares for all concerned. For it is increased production, resulting from tools and machinery which increase individual productivity, that gives us our higher standard of living."

Reviewing the record of accomplishment in industrial safety, Mr. du Pont said that "the safety movement, instead of basking in the glow of past accomplishments, must be pursued even more vigorously." Although the 1953 death rate from accidents, 60 per 100,000 population, was the lowest on record, he cited a toll in the United States that year of 95,000 lives and 9,600,000 injuries. "The time lost by workers from accidents of all kinds," he said, "was equal to a year's shutdown of industrial plants employing 1,100,000 men and women. In other words, it was the equivalent of removing from production all the plants of General Motors, Ford, Chrysler, and the United States Steel Corporation. It is estimated that 1953 accidents cost our economy more than $9 billion, representing nearly one quarter of our budget for national defense. This is a staggering loss of manpower and resources, especially in a period regarded by our national leaders as one of the most critical in our country's history."

Suggesting that safety records may be further improved, Mr. du Pont said that nearly two-thirds of all industrial accidents occur in companies with fewer than 100 employees. These companies, he said, have an accident frequency rate more than double that of the larger companies, and appear to be "a fruitful area for improving our performance." Also, he suggested improvement in off-the-job safety. "In analyzing the safety of Du Pont employees for the year 1953," he said, "we found that they suffered 11 times as many injuries at home or at play as at work. Yet, and this is important, our employees are three times safer off the job than the national average. The reason seems obvious. Safe habits at work, and an awareness of their value to the individual, instinctively lead to safer habits elsewhere."

Edmont Case No. 529: Handling racks to and from plating tanks. Unsupported rubber gloves were replaced with Edmont gauntlets coated with Neox (reinforced neoprene). User's report: "Best gloves ever used, outlasting gloves previously used many times."

Job-fitted gloves wear longer, save up to 70%

No. 366—Coated with Durox, a 50% longer wearing plastic.

No. 924—Coated with Neox, chemical and wear resistant.

With Edmont gloves, job-fitted for the application, you get maximum protection against hand injuries and cost savings averaging 40% to 70% through longer wear.

In handling sharp, abrasive or slippery materials, or where chemicals, grease or heat are present, modern Edmont gloves made of coated fabric have widely replaced canvas, leather and unlined rubber gloves. Their coatings far exceed these older materials in resistance to acids, caustics, solvents, snagging and cutting action, abrasion and other conditions. They also provide safer, surer handling, and result in improved employee morale.

Edmont Case No. 419: Working in acids and strong solvents. Job-fitted gloves coated with Neox outwore rubber coated gloves more than 4 to 1.

Edmont Case No. 207: Handling sharp-edged metal products in plating solution, Edmont gloves reduced hand injuries 78%. Also saved 6c per man-hour on cost of glove replacements.

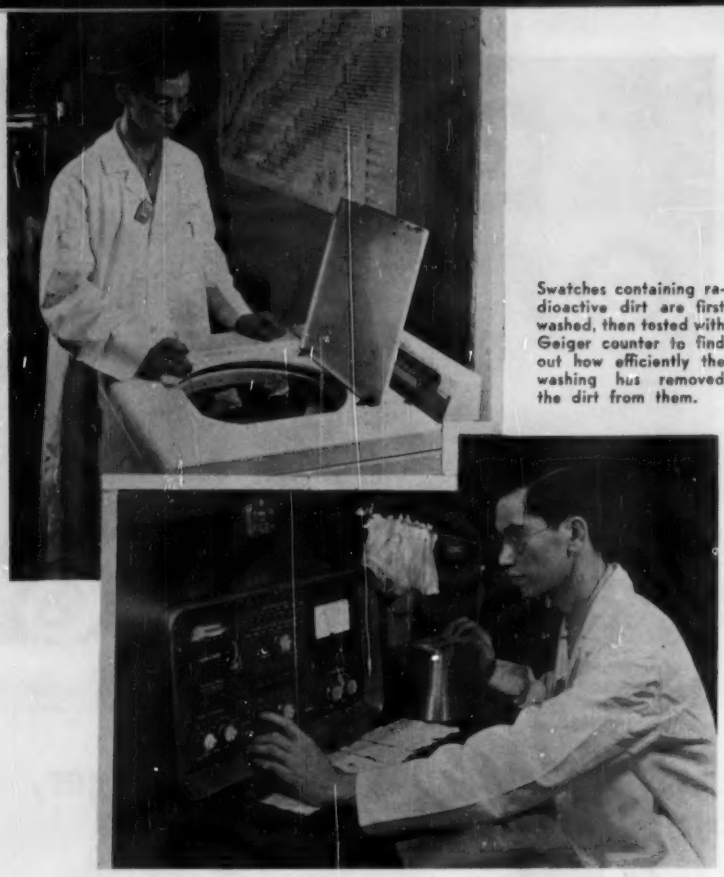
Free Test Offer to Employers: Edmont's laboratories have developed and test-rated over 50 types of palm-coated or fully-coated gloves to fit different job conditions. Send description of your operation, materials handled and temperature condition. We will recommend the glove that best fits your application and forward samples free of cost for testing on the job.

Edmont Manufacturing Company, 1256 Walnut Street, Coshocton, Ohio

World's largest maker of coated industrial gloves, available through leading industrial suppliers.

Edmont job-fitted gloves

(For details, use Key # A-15 on card on page 71)



Swatches containing radioactive dirt are first washed, then tested with Geiger counter to find out how efficiently the washing has removed the dirt from them.

Radioactive "Dirt" Tests Cleaning Methods

RADIOACTIVE DIRT is now being used routinely by a number of companies to determine the amount of soil or dirt removed from fabrics under various cleaning conditions. Because this new method permits more accurate evaluation of washing efficiency with a minimum of effort, this bids to become the first test method based on radioactivity to be adopted as an industrial standard.

The method is of particular interest to companies manufacturing equipment and chemicals for cleaning purposes as well as laundries and dry cleaning plants.

Simple and Reliable

The testing equipment is simple and reliable, according to the manufacturer. Three kinds of standard test swatches are made available, each containing a spot of radioactive dirt. The radioactivity is in the form of Carbon-14 tagged protein, carbon black or fat. The measurement of the radioactivity in a special "Soil-O-Cator" Geiger counter after washing, compared with the same measurement made before washing, shows the extent of soil removal in the cleaning operation. The measurements may be made by relatively unskilled personnel.

Not Dangerous

The instrumentation and swatches may be obtained without AEC authorization and may be handled without undue safety precautions, since the radioactivity of each swatch is low and non-penetrating. The long half-life of the isotope, C^{14}, and the non-ageing characteristics of the dirt make possible long storage of the swatches if necessary.

Pictures by courtesy of Nuclear Instrument and Chemical Corp.

Paint Progress

(from page 17)

existing type products and consequently odorless, alkyd and varnish substances have become available from which outstanding one coat non-penetrating wall paints have been made to equal latex paint.

Numerous other types of coating composition should be mentioned in any discussion of recent developments. Vinyl resins, for example, which have been on the market since the mid '30's and which were slow in developing volume usage, due in some degree to their high cost, continue to gain in popularity. Their present consumption is very large because of the diversification of usage. Among the developments which are contributing substantially to the increase of vinyl consumption is the organosol and plastisol type of coating which permit the deposit of heavier films in fewer coats. Chlorinated rubber and other rubber type polymers, phenolic resins, and many polymers and copolymers have found their niche and are being used in volume. The silicones, for which so much was predicted 10 years ago, have so far failed to gain the broad usage that was predicted for them. The high cost of silicone resins limits their application in the coatings field to specific uses where their outstanding heat resistance is usable.

All of these developments point to the unavoidable observation that the paint, varnish, and protective coatings industry is drifting farther and farther away from the use of natural products. Outside house paints still depend on linseed and other vegetable oils but the use of these old stand-bys is diminishing even for this purpose. Chemists have found that better paints can be made with less oil than was thought to be necessary before World War II and this may still be reduced if current experimental work on exterior latex and alkyd paints proves successful. The old days of dependence upon imported china wood oil and natural gum as the basic raw materials for the paint industry are over. Chemistry has changed that.

Pictures by courtesy of Pittsburgh Plate Glass Co.

"What's the Law?"

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Master Superior Court, New Jersey
Member
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National Federation Insurance Counsel
Past Commander, American Legion, Post 10,
Newark, N. J.

• • •

PROCEEDINGS FOR workmen's compensation were made by claimant who suffered from epilepsy and who, while experiencing a seizure, fell on the concrete floor of the plant, struck his head and suffered cerebral concussion. The Workmen's Compensation Division granted an award from which the employer appealed. The County Court, Law Division, 27 N. J. Super. 219, 98 A. 2d 715, reversed, and claimant appealed. The Superior Court, Appellate Division, 30 N. J. Super. 353, 104 A. 2d 720, affirmed the County Court; but there was a dissenting opinion and the claimant appealed to the Supreme Court as a matter of right.

The Supreme Court in an Opinion written by Justice Wachenfeld held that the concrete floor of the plant did not constitute a hazard of employment which contributed to the accident. Judgment of the County Court and of the Appellate Division were affirmed, denying compensation.

In its opinion the Court held: "An injury suffered during the course of employment does not per se entitle one to compensation, for it must also appear that the injury arose out of the employment."

"A physical seizure unrelated to the employment is not a compensable accident."

"A level, customary concrete floor is not a hazard or special condition of employment, within rule that whenever conditions attached to place of employment or otherwise incident to the employment are factors in the catastrophic combination the consequent injury arises out of the employment."

"Even though Workmen's Compensation Act is remedial in its nature, the Supreme Court will not usurp and trespass upon the legislative province and attempt to reach by judicial decree a result which

SAFETY
INDUSTRIAL FOOTWEAR
more comfort • less fatigue
fewer accidents
TOP NOTCH
Steel
SAFETY TOE CAP
INDUSTRIAL BOOT
With or without steeltoe, black ribbed leg boot with DURATEST non-skid design outsole.
WORKIN
Net lined all black 6" work shoe with non-skid DURATEST outsole. Steeltoe or plain.
BEACON FALLS RUBBER FOOTWEAR, BEACON FALLS, CONNECTICUT

(For details, use Key # A-16 on card on page 71)

Legislature has not provided for by legislative enactment."

"Injuries to compensation claimant, who suffered from epilepsy, and who experienced seizure, unrelated to his employment which caused him to fall on the concrete floor of the plant, strike his head, and suffer cerebral concussion, did not result by reason of an accident arising out of and during the course of the claimant's employment."

HENDERSON vs. CELANESE CORPORATION, Decided October 11th, 1954; New Jersey Supreme Court.

Independent Contractor or Employee?

Claimant sued for compensation benefits and an award was entered in his favor.

It appeared that the claimant owned his own truck and was doing trucking for the defendant. While operating the truck, it tipped over and he was injured. The defendant argued that the claimant was not an employee but was in fact an independent contractor and operated his own truck.

From the award of compensation the defendant appealed. On behalf of the claimant it had been argued that the statute enacted in 1930 which provided that "any person operating his own or his employer's motor vehicle with his employer's general authorization in the performance of work, in connection with the business affairs of the employer, shall be conclusively presumed to be an employee."

On appeal, the Court ruled that the 1930 Act did not apply in this situation but was intended to protect an employee who might be injured while driving his own vehicle in the course of his employment. Prior to the enactment of the above mentioned statute, one operating his own vehicle was deemed to be an independent contractor.

The Court further ruled that it was not the purpose of the statute to turn every driver of his own vehicle into an employee of every person for whom he does work. The decision was reversed and claim dismissed.

FERULLO'S CASE, Massachusetts Supreme Judicial Court, No. 11,309; September 24, 1954.

SAFETY FIRST — BE — CAREFUL
NOTICE THESE DOORS MUST BE KEPT CLOSED
BE CAREFUL SAVE A LIFE IT MAY BE YOUR OWN
HELP KEEP THIS PLACE CLEAN
THINK ACCIDENTS ARE AVOIDABLE FORGET THE ALIBI.
EXIT
DANGER — NO SMOKING
WARNING CURRENT —ON—
CAUTION KEEP AISLES CLEAR

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Sargent-Sowell maintains a complete inventory of more than 5,750 different standard signs for immediate delivery.

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Sargent-Sowell will supply you quality signs for less money.

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(For details, use Key # A-17 on card on page 71)

The Windows Stayed

(Continued from page 23)

of a wall was blown through it. Up to that time not one cent had been spent on replacement of broken window panes since the installation of white translucent plastic glazing two years ago. Previously the company—which manufactures maintenance and industrial paints—faced a yearly replacement bill of about 400 dollars.

And Small Boys

The decision to make the changeover to plastic throughout its main plant was based on the company's successful experience with the material in a warehouse nearby. There the material had to confront another danger to windows—a children's

playground within a stone's or baseball's throw of the warehouse. Again the windows came through—resisting weather and showing no broken panes in 3 year's service.

With the installation of the new type of window in the company's main plant, employee morale has risen and cost has fallen. Because of the acrylic plastic's excellent light-diffusing properties, work areas are bright with daylight even on cloudy days; the need for electric lighting and the accompanying costs have been eliminated. Furthermore, the material's breakage resistance is also an important safety factor.

Space & Light

When the glazing in the main building was changed from glass to .125 inch plastic it was possible to brick up part of the old window openings to achieve two, seemingly conflicting, objectives. Much needed wall space from floor to window-sill was gained. But at the same time, the amount of effective daylight inside the plant increased. In shadowy areas around machinery and underneath shelving, the effect was particularly noticeable. In addition to diffusing light more evenly, the acrylic plastic has reduced sky glare to a minimum. An extra bonus accompanying the use of translucent glazing: employees are no longer distracted by a view of the outside traffic and events.

Breakage Solved

Formerly, company officials had been resigned to keeping basement windows permanently boarded up because of continual breakage from drums, trucks and general industrial traffic. Now they have bricked up the windows except for small plastic-glazed areas.

With the hurricane past, the company has attacked the damage done by the storm. As the roof goes back on and the walls are repaired, workmen will find the windows waiting for them—unharmed.

Pictures by courtesy of Rohm & Haas Co.

NEW...

Scientific Advance in Head Protection

Internal as well as External head protection achieved by patented "geodetic" suspension in New Willson Super-Tough® Hats and Caps.

Realizing that most fatal head injuries are due to shock to the brain rather than injury to the skull, the Cornell Aeronautical Laboratories designed and patented a new suspension system for industrial safety hats that provides maximum protection and comfort to the wearer.

This patented suspension is available only in Willson Super-Tough® Hats and Caps!

This suspension is made up of "geodetic" crown straps scientifically located to distribute the force of a blow over the entire head—not concentrate it in a small area on the crown of the head. In addition, the tough Fiberglas hat shell is made safer and more comfortable to wear by the pneumatic cushioned head band. This pneumatic cushion absorbs and distributes the force of lateral blows through a series of metered, interconnected air cells.

Write today for the new Willson Super-Tough® hat bulletin which describes in detail the "why and how" of these new Willson Super-Tough® hats with the advanced, patented suspension.

Clip and mail coupon for latest head safety information.

Please send me your bulletin on the new Willson Super-Tough® Hats and Caps with "geodetic" crown straps and "pneumatic" head band.

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More Than 300 Safety Products Carry This Famous Trademark

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Leaders in Research and Development of Safety Equipment Since 1870

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(For details, use Key # A-18 on card on page 71)

KEEPING UP WITH...

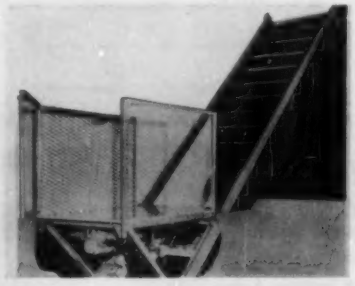
Safety Developments In Materials Handling

[illegible] FEATURED ARTICLES IN THIS ISSUE
previous articles in November & December

STAIRWAY LIFT

THIS NEWLY designed Cargo Lift can be easily installed over any existing stairway or bolted to any side wall. It is a complete passenger or freight elevator equipped with all modern safety devices, and will operate on any available electric current.

The elevator comes in three standard sizes: 500, 1000, and 2000 pound capacities. Very little altering of the existing building is needed for installation. Stairway models require a small pit at the bottom of the stairway; trap-door or open types require only a hole cut in the top floor through which the elevator is to enter. All units stop automatically flush with the floor level, and in the "down" position do not interfere with normal stair usage.



For details, use Key # MH-10 on Inquiry Card on page 71.

EXHAUST SPARK MUFFLER

THE DEVELOPMENT of a Cyclone Muffler to capture carbon particles and eliminate the discharge of ignited solids in exhaust gases has been announced by The Yale & Towne Manufacturing Co. Centrifugal action is employed to throw solid particles into a collector. When installed on gas or diesel powered trucks, the cyclone muffler reduces the possibility that ignited exhaust particles will set combustible materials on fire. Factory Mutual approved, the muffler is of the dry type and does not require water or other servicing.

For details, use Key # MH-11 on Inquiry Card on page 71.

HOOK WITH SAFETY GATE

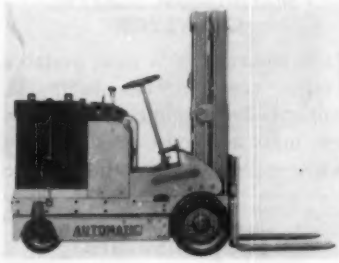
A HOOK WITH A Safety Gate which locks automatically and will not open unless the pin is manually depressed is but one of the guaranteed safety features of the new Bullard-Burnham Safety Hook. By making it impossible for the load to slip off, the new hook gives added protection to the men operating derricks, hoists and cranes.

The new design of the Safety Gate uses the hook shank as its operating base yet does not obstruct the throat of the hook. The rust proof gate, which can be adapted to fit all makes and sizes of standard hooks, opens and closes with ease in all types of

weather. It swings open horizontally on the shank axle so that even a full hook load will not snag in loading or unloading operations.

The Safety Hooks of the E. D. Bullard Co. are drop forged steel as supplied by established hook manufacturers. Component parts are Cadmium plated. Non-Corrosive Safety Gates are of brass and are available with or without return spring for automatic closing. Rust proof lock pins are of Duronze. The hooks are now available in sizes #2 to #16A. Hooks with greater weight capacities available on special order.

For details, use Key # MH-12 on Inquiry Card on page 71.



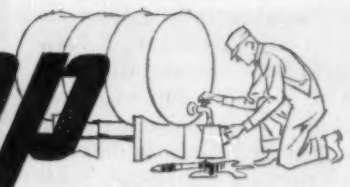
INDUSTRIAL TRUCKS FOR SEMI-HAZARDOUS LOCATIONS

A COMPLETE line of standard industrial trucks made by Automatic Transportation Co., is now listed by Underwriters' Laboratories for semi-hazardous operations involving unusual fire risks.

The industrial trucks carrying the UL's EE labels include three BF standard Skylift models with rated capacities of 2,000, 3,000, and 4,000 lbs.; and the LFS models, with rated capacities of 4,000, 5,000, and 6,000 lbs.; the operator-led electric Transporter, Transtacker, and Transtractor trucks. Transporters, both pallet and platform types, carry loads up to 6,000 pounds. Transtackers handle pallet or skid platforms to stack loads up to 5,000 pounds. Transtractors are designed to push or pull loads up to 20,000 pounds.

Typical locations in which type EE industrial trucks may be used, include: 1. Places where flammable volatile liquids, gases, or vapors

Stop dangerous handling of INDUSTRIAL LIQUIDS



You can stop dangerous handling of liquids and frequently reduce insurance costs in the process, by using Tokheim Transfer Pumps in maintenance work. Spilling, slopping, over-filling and dripping—constant enemies of safety—are easily prevented. Your plant can be kept cleaner. Work is speeded. Waste is halted. Accidents are prevented.

Business and industry are daily finding more uses for these rugged little Tokheim pumps. They are available with hose or spout outlets and other optional attachments. Pump operates on both forward and back strokes and is capable of delivering 20 gallons a minute. Will pump 'most anything that pours. Offered with alternate parts to handle special liquids. No plant should be without a battery of Tokheims.

Call your dealer, your Tokheim representative, or write factory for literature.

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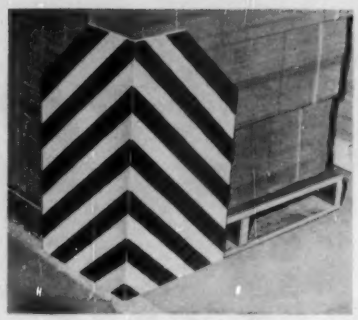
Gasoline Pumps and Accessories • Air and Liquid Dispensers • Specially Engineered Products

(For details, use Key # A-19 on card on page 71)

would become hazardous only in case of accident or in case of unusual operating conditions; 2. Locations where dangerous concentrations of suspended dust would not be likely, but where dust accumulations might form on or in the vicinity of electrical equipment; 3. Locations in which easily ignitable fibers or flyings are handled, manufactured, or used, such as textile manufacturing, cotton gins and cotton-seed mills, flax processing plants, clothing manufacturing plants, and woodworking plants.

A line of Automatic "explosion-resistant" HF model Skylift electric trucks (shown here) with rated carrying capacities of 2,000, 3,000, and 4,000 pounds previously was awarded Underwriters' EX label for use in hazardous locations (Class 1, Group D, Division 1) involving danger of fire or explosion.

For details, use Key # MH-13 on Inquiry Card on page 71.

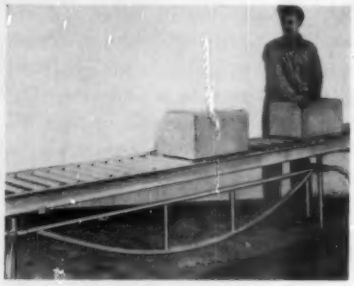


CORNER GUARD

LOADS CAN be protected against traffic damage at every corner with the new RAN-guard all-steel corner guard, manufactured by Randolph Industrial Equipment Co., a division of Northern Metal Products Co.

With its steel gusset slipped under the load (either on the floor or beneath the pallet), the guard helps to prevent accidents and load damage caused when lifts and trucks scrape the corner of a load. The colors of the guard are bold black and yellow baked enamel stripes, which conform to the safety color code and make the corners highly visible so there is less likelihood of their being struck. It can be used with all types of storage—on skids, pallets, floor, etc. Available in two sizes for various sized loads.

For details, use Key # MH-14 on Inquiry Card on page 71.



MAGNESIUM ROLLER CONVEYOR

INTRODUCTION OF A new, portable roller conveyor has been announced by Magline Inc. These new units are constructed entirely of magnesium and, according to the

I KNOW I'M SAFE... with WOODEN SOLES!

...FOR THE FOUNDRY

No. 351—An improved Reece "Hot Foot" Sandal with two strong sole leather hinges provides real insulation for those hot jobs. Straps on quickly over any shoe.
Sizes—Small-Medium-Large.

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PROTECT FROM "ATHLETE'S FOOT"

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Dept. SM-1
(For details, use Key # A-20 on card on page 71)

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(For details, use Key # A-23 on card on page 71)

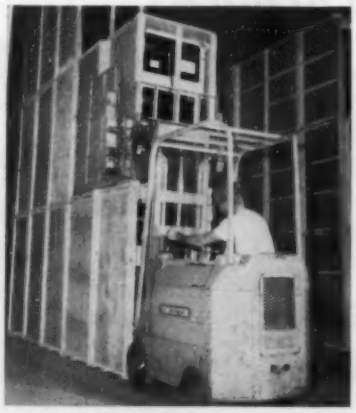
manufacturer, weigh from 15 to 40 percent less than comparable equipment of similar size and capacity.

Suitable for permanent installation or for portable use, the conveyor can be easily set-up or dismantled by one man, and greatly facilitates conveyor job spotting in plants and warehouses. Available in two capacities: 500 lb. and 900 lb. Roller sizes range from 12 inches to 20 inches. The new Magliner units can be installed as a complete system, or supplied in individual sections, with couplers to match existing systems. Portable magnesium stands in three height ranges, 17 to 72 inches above floor level, are also offered.

For details, use Key # MH-15 on Inquiry Card on page 71.

CARTON CLAMP

HIGH-STACKING of heavy loads with a carton clamp is now said to be completely safe with the double-action hydraulic Carton



Clamp developed by Towmotor Corporation. This clamp permits faster approaches when removing heavy loads from a stack with a fork truck, because each arm is controlled by a separate hydraulic control lever. Clamp-arm pressure applied to both sides of the carton can be equalized by the driver to prevent the tipping over of high stacks of cartons. High-stacking with the clamps increases storage capacity, permits even-stacking and eliminates breakage.

For details, use Key # MH-16 on Inquiry Card on page 71.

BRIDGE RAMP WITH HANDLES

ONE-PIECE formed lift handles, a new modification on the "One Man" Bridge Ramp, has been announced by the Elizabeth Iron Works, Inc. Said to be virtually unbreakable and capable of withstanding hardest use, the steel handles accommodate the forks of any standard fork lift truck.

(Continued on next page)

When not in use, the handles drop into recesses in the ramp riding surface. In raised position, they permit the lift truck to transport the ramp to and from location. The fork lift truck operator raises and lowers the lift handles with one simple, quick motion. With a load capacity of 15,000 pounds, the "One Man" Bridge Ramp spans gaps from 5 to 58 inches. It is used between loading platform and freight car or truck.

For details, use Key # MH-17 on Inquiry Card on page 71.

LIGHT WEIGHT HAND TRUCK

A NEW MAGNESIUM hand truck has been added by Magnesium Company of America, to its line of magnesium materials handling equipment. The MAGCOA hand truck weighs 18 pounds, but its rugged capacity tops 500 pounds. It weighs one-fourth to one-third that of hand trucks made of other materials with comparable capacities. Its all-bolted construction enables

easy replacement of parts. The lightweight heavy-duty truck is ideally suited for use on beverage and other delivery trucks and for general factory, warehouse and loading dock use.

For details, use Key # MH-18 on Inquiry Card on page 71.

Investigate Accidents

(Continued from page 14)

case has been clear and proper disposition made. These investigations are frequently used by our insurance division to determine the extent of compensation which should be borne by the company.

Worth the Cost?

It is difficult to justify the cost of this type program since most of the benefits are of a rather intangible nature. This can be done only by a comparative figure of the results which are compiled from year to year. Because definite gains have been made in reducing industrial accidents and the cost of personal injury of employees to the company, we must then assume that it is worth whatever the program may cost.

From an address delivered at the 41st National Safety Congress.

Pictures by courtesy of Caterpillar Tractor Co.

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HOOD HEAVY-DUTY GLOVES

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Model 4705
Also available as 7705, 12" gauntlet.

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HOOD RUBBER CO., WATERTOWN, MASSACHUSETTS
A division of the B. F. Goodrich Company

(For details, use Key # A-22 on card on page 71)

Industrial Hygiene

Ventilation Conference

A THREE-DAY Industrial Ventilation Conference, sponsored jointly by the New York State Labor Department's Division of Industrial Hygiene, and Rensselaer Polytechnic Institute in Troy, New York, will be held at the Institute from January 31 to February 2, 1955.

Designed to increase knowledge of industrial exhaust systems which comply with the New York State Industrial Codes, the conference is also expected to stimulate interest in, and appreciation of the economy of, well-designed systems. The program will also include lectures by personnel from the medical and chemical units of the Department's Industrial Hygiene Division, to provide a complete picture of the industrial hygiene problem.

Main emphasis, however, will be on exhaust system design. Basic engineering lectures on the subject will be given. Classroom problems will offer the relatively inexperienced, as well as the advanced designer, increased knowledge of the science.

The Institute fee, including the Manual and the February 1, dinner, will be $25.00. For application blanks contact Professor A. A. K. Booth, Associate Chairman, Co-operative and Extension Education, Rensselaer Polytechnic Institute, Troy, New York.

A.P.H.A. Meeting

THE 82ND annual meeting of the American Public Health Association and 38 related organizations drew 3,500 public health workers to Buffalo last October. Dr. Reginald M. Atwater, executive secretary of the Association, called the meeting "one of the most significant in our history because of the emphasis on program evaluation, which means that thousands of specialists are now back on the job, in governmental and private agencies, with new perspective as to the practicalities of their day-to-day activities."

Topics of special interest were smoking and lung cancer; the combatting of infectious hepatitis and other epidemic diseases; newly discovered respiratory viruses, and developments in such health areas as air pollution, childhood accident prevention and food sanitation.

An innovation was a two-session symposium, open to all delegates, which considered from many points of view the impact of suburbanization of public health.

The president of the Association for 1954–55 is Dr. Herman E. Hilleboe, New York State commissioner of health, and the president-elect, Dr. Ira V. Hiscock, professor and head of the department of preventive medicine, Yale University. The 83rd annual meeting will be held in Kansas City, Missouri, November 14–18, 1955. The Municipal Auditorium will be headquarters.

Industrial Hygiene Courses

IN CONJUNCTION WITH its industrial hygiene program, the Institute of Industrial Medicine is offering two courses designed to deal with some of the basic problems encountered by those concerned with the control of environmental hazards. These courses were planned to be of particular interest to industrial hygienists, safety engineers, industrial physicians, insurance representatives and others in the field of occupational health and safety.

The courses are given in cooperation with the New York University College of Engineering and will be held at the Engineering School during the spring semester (February 7–May 27). Classes will meet in the evening for 15 weekly sessions. Tuition is $66.00 for each course. Application should be made through the Office of the Dean, New York University Post-Graduate Medical School, 550 First Avenue, New York 16, N. Y.

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(For details, use Key # A-43 on card on page 71)

Vacuum Cleans Everything

(from page 15)

hauster. The first hopper is the primary separator where the larger particles are separated out. The secondary separator traps the fine particles and dust.

To clean out a wind box, boiler room personnel connect the flexible hose to the nearest vacuum outlet and insert the metal nozzle into the box. The coal is picked up by the vacuum and carried back through the system where it is collected in the primary separator of about 3-ton capacity.

The recovered coal is dropped through a hatchway at the bottom of the separator into a large, wheeled lorry which takes the coal back to the furnaces' coal hopper for reuse. The fine particles and dust are reclaimed by a vacuum driven fly-ash reclaimer connected to the top of the secondary separator. The reclaimed fines are blown directly into the fire bed for their fuel value.

Vacuum's Versatility

The central vacuum system is versatile. It is also used to clean out collected fly ash from the boilers during routine maintenance shut-downs, usually once or twice a year. The vacuum system saves a considerable amount of time in this operation too. Formerly, the fly ash was removed by a team of 3 men per boiler. One man working in the boiler would shovel the ash into a bucket, the second would carry it to the boiler door, and the third man would empty the ash into a wheelbarrow for disposal.

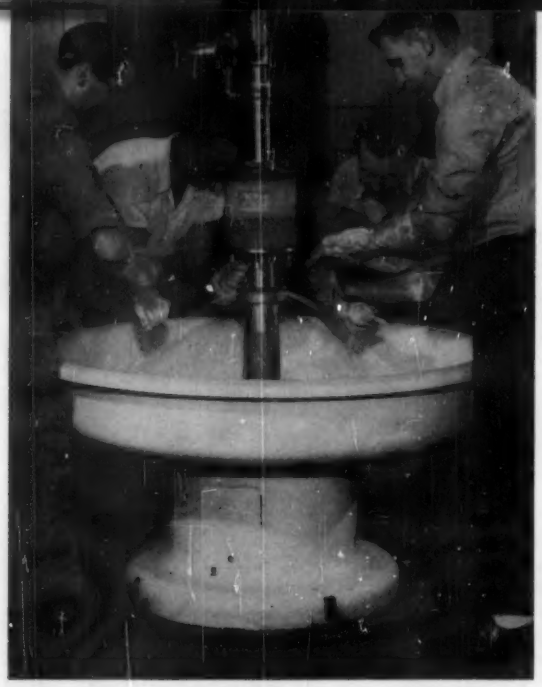
Now, one man using the vacuum-connected hose can clean out a boiler by himself. Actually, 3 or 4 men work simultaneously in individual boilers, each with a separate hose line, and remove the fly ash in less than half the time required by the old shovel-and-bucket system.

Building Maintenance

In addition to these two uses, the vacuum system is also used for routine clean-up of dirt and soot around the boiler room, on floors, walls, beams, etc., with far less dust and in considerably less time than with the old broom-and-shovel technique.

Speaking only of the time and manpower saved in performing these once grimy, but necessary, boiler room chores, Joseph K. Kroboth, chief engineer at the company, estimates that the system pays for itself fully after 2 years of operation. From the standpoint of convenience, cleanliness, and higher morale—all intangibles, but all-important to the operating efficiency of any power plant, the system continues to pay additional dividends every week.

Pictures by courtesy of Lamson-Billmyre Co.



How Clean Is Clean?

A WARTIME-INTRODUCED cleanliness program continued in peacetime has practically eliminated industrial dermatitis at the Ford Instrument Company division of the Sperry Corporation, Long Island City, New York. The incidence of industrial dermatitis is extremely low in spite of existing exposures, explains Gilbert F. Tyler, the company's safety director.

"As a result of continued emphasis on cleanliness," says Mr. Tyler, "we have reduced dermatitis to a present low of about 5 minor cases per month. In the last 18 months, only 3 of these minor cases were sufficiently serious to report under the Workmen's Compensation Law. Manifold benefits have resulted from our cleanliness program. "We definitely feel it has boosted employee morale and returned to us benefits in production efficiency, less sickness, and less absenteeism. Lower insurance rates are one of the indirect benefits. Although difficult to compute, the benefits have greater value than the program costs. Due to our recent favorable experience, our dermatitis costs per worker are extremely low, a matter of only a few cents. Our average per case is 110 dollars."

Contagious Cleanliness

The safety official says it has been his personal experience that industrial dermatitis seems to occur more frequently among those who have questionable personal hygiene.

The idea of cleanliness is contagious he thinks. Those who keep themselves clean have a tendency to keep work areas clean. This contributes not only to the reduction of industrial dermatitis but can, conceivably, also reduce work accidents. The psychological results can also be extended to fire prevention.

The company's industrial cleanliness program is integrated, as far as possible, with all the various plant operations. Starting with the time a new employee is indoctrinated and receives his first talks with the medical department during pre-employment examinations, he continues to receive hygiene instruction on the foreman level while he is at his job.

"We hope by this procedure to make cleanliness an integral part of an employee's normal activity, rather than something special and set apart," Mr. Tyler remarks.

The importance of cleanliness is frequently discussed at plant meetings, implemented by the use of posters at strategic spots. One effective poster shows a worker's hands immersed in soapsuds, with the reminder: **Wash up for safety.**

Liquid and powdered soaps are used, in addition to 6 different types of protective creams. The creams are necessary because of the variety of industrial exposures. Proper washing procedures are explained orally by foremen and by occasional memoranda.

To induce cleanliness, all employees exposed to toxic materials, such as paints and solvents, and those working on coolants and cutting compounds are allowed 5-minute wash-up periods before lunch and upon leaving work. Sinks and wash fountains are added and replaced as the relocation of work areas and needs arise. Using the equation that one wash fountain equals twenty sinks, the plant has a ratio of 4 employees to a sink. Approximately 40,000 dollars is spent yearly on "building operating supplies, sanitation, and porters." Soaps, towels, and cleaning fluids account for half of this.

Paper towels are provided throughout offices and plant areas. Approximately 1,572 cases of paper towels

(Continued on page 43)

End of a headache ... CATALYST CUTS MONOXIDE

CELLULOSE AND PAPER Converting Company, Philadelphia, Pa., has been able to cure a lot of headaches—literally as well as figuratively—since it equipped its gasoline-powered fork lift truck with a catalytic exhaust.

The firm which makes business machine rolls, teletype rolls, shelf paper, freezer wraps and similar products, recently leased a one-story building of 20 thousand square feet well laid out for powered fork-truck handling of large paper rolls and palletized cartons of finished products.

When it moved into this plant and modernized its materials handling operations, the company bought a lift truck with 4000-pound capacity and a 10-foot lift. Plant executives favored a gasoline-powered truck because of initial cost advantage and because it could be kept operating continuously without the need to charge batteries.

From a performance standpoint, the truck left little to be desired. However, gas fumes tended to concentrate because of insufficient ventilation, and soon there were numerous complaints about sick headaches in areas where the truck operated.

Monoxide Hangover Licked

The problem was referred to the dealer who had sold the truck to the company. The dealer recommended installation of a catalytic exhaust, manufactured by Oxy-Catalyst, Inc., to remove the carbon monoxide and other noxious gases contaminating the atmosphere.

The general manager of the company felt this would be a worthwhile investment in terms of employee safety and comfort, and authorized the dealer to equip the truck with a catalytic exhaust. Since catalytic exhausts are furnished as standard, completely assembled units for any make or size of fork lift truck, it required less than 2 hours to remove the regular truck muffler and replace it with the catalytic unit.

Results were immediately apparent. Although the truck is operated indoors continuously for 6 hours each day, there have been no perceptible effects on the workmen from the engine exhaust. Complaints of headaches have disappeared completely.

How It Works

The basic unit of the catalytic exhaust is a cartridge of spaced porcelain rods coated with a catalytic agent—catalytic alumina and platinum alloy. As the engine exhaust flows across the surface of these rods, carbon monoxide and other noxious vapors are oxidized to harmless effluents, mostly carbon dioxide and water vapor. The slight trace of contaminants remaining is far below the minimum tolerance of the U. S. Public Health Service.

The cartridge used in the catalytic exhaust is the same device which has gained national recognition in combating air pollution and recovering waste-heat energy from stack gases in industrial plants.

The same manufacturer has also developed a muffler for 4-cycle diesel engines which uses the cartridge. It

burns off the objectionable hydrocarbons and carbon monoxide in 4-cycle diesel engine exhausts and gets rid of the objectionable odors that have held back the indoor use of diesel-powered equipment.

Symptoms Disappear

When used as an exhaust gas purifier in industrial trucks, the device not only stops headaches, eye irritation, nausea, fatigue and other common symptoms of monoxide poisoning, but also prevents insidious and highly dangerous psychological symptoms. An excess of carbon monoxide has been known to seriously affect judgment and reasoning power, creating a safety hazard.

The catalytic exhaust uses two or more cartridges, depending upon the cubic-inch displacement of the engine. It can be used on any engine—mobile or stationary—which burns unleaded gasoline, and it can be easily adapted to LP Gas engines.

The units are easily installed by a mechanic or by the truck dealer. Leading truck manufacturers factory-install catalytic exhausts as optional equipment. Space requirements are the same as for the regular muffler.

Picture by courtesy of Oxy-Catalyst, Inc.

How Clean Is Clean?
(from page 41)

(25 cartons each), 45 drums (54 gallons each), and 4,500 pounds of soap are used yearly. The company has an arrangement with a local laundry for washing aprons and work clothes, with employees paying a nominal fee. An occasional "housekeeping" contest, with rules and awards, keeps employees aware of the benefits of cleanliness.

Savings Are "Appreciable"

"The cost of the total accident prevention program is debatable," Mr. Tyler notes. He maintains that safety equipment, safety glasses, safety shoes, respirators, and other items should be charged as operating expenses. Deducting these leaves only a nominal office expense and the salaries of a safety director and clerk. The safety official said it is difficult to compute the savings for plant and employee cleanliness, although it is known to be "appreciable."

In addition to the emphasis on personal cleanliness, approximately 30-odd porters and matrons keep the plant as clean as possible. The rest rooms and wash rooms are cleaned twice daily and the floors weekly.

Cafeteria facilities are provided serving 2,100 employees daily. Cleanliness is emphasized in the daily cleaning program, with particular attention to floors, counters, and tables, as well as to cooking facilities and refrigerators. Health certificates are required of cafeteria workers. The usual signs on washing requirements hang in adjoining washrooms.

Pictures by courtesy of Association of American Soap & Glycerine Producers, Inc.

The Industrial Nurse

Editor
Rosamond J. Webster
R.N., A.M., Ph.D.

Cold Cure Hunt

IT HAS BEEN ESTIMATED THAT the common cold costs industry approximately 2 billion dollars a year, from employee absenteeism. The search for a cure has been going on for some time without any measurable success. The Common Cold Foundation, a recently organized group, has announced plans to spend 500 thousand dollars over the next 5 years in an attempt to learn how to prevent or cure the common cold. Funds will be spent for research projects in several leading universities. An interesting detail is that leading industrial concerns, which are among the chief financial losers will be asked to contribute to the fund for obvious reasons.

Infection is usually by a filterable virus. The causative agent is readily transmitted from person to person; especially to those whose resistance has been lowered in some way.

Nurses are of course familiar with basic factors relating to this widespread affliction. It may be worthwhile, however, to review the basic factors which are responsible. These include (1) general debility, (2) structural abnormalities, such as hypertrophied tonsils, (3) foci of chronic infection, (4) allergic disorders of the nasapharynx, (5) vasomotor instability resulting in prolonged swelling of the nasal mucosa following exposure to cold or emotional strain, (6) injury to the mucous membranes due to inhalation of noxious fumes.

Many measures, including polybacterial vaccines, have been recommended for prophylaxis in aborting upper respiratory infections. Reports indicate that thus far none has proved to be effective. Various other remedies, including vitamin C or large doses of vitamins A and D, as well as other preparations have been tried.

The fact that the Common Cold Foundation is being organized is an indication that thus far no prophylactic for colds has been found to be effective. The search is going on in many laboratories and will continue until scientists on the staffs of commercial firms and in university laboratories come up with an adequate answer. In the meantime, industrial nurses must follow standard procedure recommended by their staff physicians in advising ailing workers.

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(For details, use Key # A-24 on card on page 71)

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STANZOIL
Quality Gloves for 35 Years

(For details, use Key # A-25 on card on page 71)

Advising the Obese

IN VARIOUS TECHNICAL AND lay publications the subject of obesity is mentioned periodically. A midwestern psychiatrist summarizes the problem by indicating that most overweight persons are obese because of psychiatric disturbances rather than organic diseases.

If physical examination and laboratory tests are negative for an obese person who has had no previous disease, then a physiological disorder is unlikely. The chief problem in such a case is control of food intake. Age, height, body build, and lifelong eating habits must be considered in planning weight reduction. Standard height-weight tables are inadequate guides. Knowledge of why an individual may want to reduce is essential. Likewise, in an industrial setting, advice to a worker to reduce must be given on the basis of the indicated data, with a full explanation of the health and efficiency reasons for the reduction.

This quoted psychiatrist indicates that the patient may use overeating as a method for passively avoiding social responsibilities; as a symbol for a desired pregnancy; or as a method of gaining a feeling of security. Severely obese patients commonly cheat or lapse from the diet prescribed. It is a frequent experience to have such a person say "I am on a strict diet but look at me, I cannot lose any weight." Such comments and complaints cannot fool the physician or informed industrial nurse. Frequently persons using a reducing diet regain lost weight if the emotional cause of the obesity is not found.

It is also recommended that extreme caution be exercised in determining the amount of weight reduction for middle-aged persons. These individuals are frequently adjusted to a set of habit patterns. Interference with their habits may lead to severe irritability or depression. Of course, this does not necessarily apply to the hale and hearty young adult, nor even to all mature adults. Dieting can be of much help psychologically, but it must be advised and planned carefully.

Minor Disabilities

IN BOTH INDUSTRIAL PLANTS and commercial offices it is the severe accident that often serves to dramatize failure to observe safety rules. Many minor ailments and disabilities do not show the same cause-effect relationship as clearly as a major accident. The numerous rashes or skin infections in industry, that affect the hands particularly, can be traced generally to certain basic products used in manufacturing. However, these ailments are also found among office workers.

In a recent study of 1200 office workers, 3 percent were found to have been affected by the substances they used in their routine tasks. Such substances included: machine (office) dyes and inks, their chemical removers, glue handled or licked, some types of paper, rubber in rubber fingers, thumbs, or elastic bands,

cardboard, paper towels, paint on pencils, carbon paper, and liquid soap.

It is readily understandable why these causes of skin rash are not readily recognized, but industrial nurses should be alerted to their presence. Most likely, in a good proportion of these minor but troublesome ailments, some susceptibility or allergic reaction will be found to be the basis of the difficulty. A properly applied patch test by the plant physician or a physician to whom the worker goes of his or her own accord, or is referred to by the medical department, will determine the substance involved. Proper precautions can then be undertaken. The incidence of such complaints is evidently not large, but a troublesome case may lead to absenteeism, some disability and even workmen's compensation costs.

Self Treatment

RECENT NEWSPAPER STORIES indicate that in the opinion of at least one competent medical observer the average medicine chest carries many hazards. The industrial nurse has an unusual opportunity to reach a large number of persons who are often inclined to make their own diagnoses of complaints by members of their families or even of themselves; to prescribe their own treatment; and then use some wholly unsuited patent medicine, or even simply aspirin. This is particularly the case during the winter season when respiratory and other ills tend to show a comparatively high incidence.

A leading medical journal presents the case histories of a group of patients with some form of skin disorder. About 70 percent had to be hospitalized because of the general effects of wrong treatment or over-treatment. Self-diagnosis and self-treatment disabled these persons. Some bought and applied at least a dozen different remedies to some skin disorder. Trivial skin rashes, irritations and other minor skin injuries were treated with antiseptics, germicides, and disinfectants without medical advice and prescriptions. The results were woeful in 7 out of 10 cases.

Turning aside from skin conditions which often baffle competent physicians as to their cause and the therapy indicated, there are many other complaints for which self-treatment is attempted. Perhaps the most prevalent one is the common cold, for which self-diagnosis is often the rule. The "just a cold" complaint may of course be the sign of pneumonia or some other serious condition. The dizzy spell is apt to be due to lack of sleep, or indigestion, or some simple cause—but it may also be significant of some serious systemic disease, as all nurses are aware. The same applies to the sufferer from a headache, the cause of which may range over a wide area. Hammering away through person-to-person talks, by lectures, and by literature may drive some at least to their own physicians or the plant medical department while treatment can still help effectively.

It occurs every day. ALGRIP Abrasive Rolled Steel Floor Plate is installed—then insurance premiums tumble—slipping accidents stop.

The reason is tough steel floor plate *impregnated uniformly* with abrasive "grinding wheel" grain. Result: A truly non-skid surface that *stays* slip-proof, because wear only exposes new particles . . . a "safety extra" offered only by ALGRIP.

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Underwriters' Laboratories approved for safety. Note depth and uniformity of abrasive grain.

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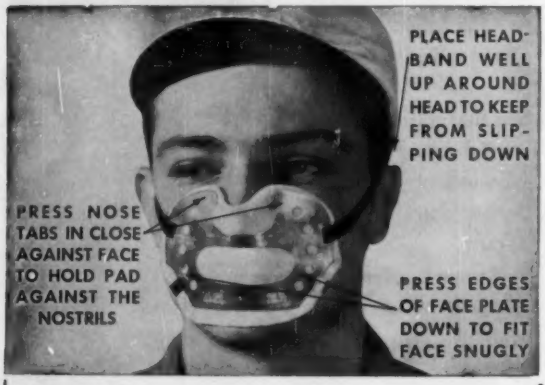
Rehabilitation

AT THE 39TH ANNUAL CONVENTION of the International Association of Industrial Accidents Boards and Commissions, held in October 1953 (the report of which recently became available) much attention was given to the question of the rehabilitation of injured workers.

Centers specifically devoted to such purposes are being operated by insurance companies, workmen's compensation boards, universities—such as New York University and Ohio State University—and various nonprofit organizations. Of course, many hospitals, throughout the country, provide expert facilities for the diagnosis and treatment of those who require special rehabilitation services. One insurance company organized a center in 1943 because it was felt there were too many cases of injured workers who would be permanently and totally disabled unless measures were taken to restore their ability to work.

A great many workmen's compensation cases have been coming up for schedule awards before an end result has been reached. A great deal of loss of use of injured parts can be overcome and schedule awards reduced if good physical restoration techniques are applied. This summarizes in various ways specific motivation in the organization of rehabilitation facilities. If adequately organized and competently administered, there is a distinct dollar value in the services rendered with considerable opportunities for overall savings in carrying compensation risks. Added to this is another and perhaps prime consideration—the reduction in totally or severely disabled workers, possible burdens to themselves, their families, and to society as a whole. Those who come in contact with injured workers—and industrial nurses are in the forefront—need to be informed of available rehabilitation facilities, under whatever auspices. Their advice and support may at times be of supreme importance in inducing seriously injured workers to seek out competent rehabilitation facilities, to accept the program proposed, and to continue under care as long as may be deemed necessary.


PLACE HEAD-BAND WELL UP AROUND HEAD TO KEEP FROM SLIP-PING DOWN
PRESS NOSE TABS IN CLOSE AGAINST FACE TO HOLD PAD AGAINST THE NOSTRILS
PRESS EDGES OF FACE PLATE DOWN TO FIT FACE SNUGLY

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PROTECTIVE MASKS

These light-weight aluminum masks provide protection against over 400 dusts such as wood, coal, lime, salt, cement, grain, rust, paper, textiles, some insecticides, paint spray from non-toxic paints, etc. Pads can be changed in a few seconds. Only clean gauze touches skin. Comfortable to wear. Workers like them.

Martindale Protective Masks	$.30 each
No. 1 Refills (Standard weight)	.02 each
No. 2 Refills (Heavy weight)	.02½ each

Write for quantity discounts

MARTINDALE ELECTRIC CO.,
1397 HIRD AVE., CLEVELAND 7, OHIO

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Subjects of Concern

A NEW TEXTBOOK ON occupational medicine, prepared by a group of well-qualified physicians, research workers, a psychiatrist, a lawyer and an industrial nurse, is representative of the broad concept which is currently applied to this field of medicine. The growth and broad development of American industry, with the concomitant production and use of new products has at the same time, led to many new problems. However, the major emphasis must still be placed on the preventive aspects of industrial medicine.

For the purpose of indicating current thinking on the subject, let me enumerate the chapter titles of this new book. Slightly abbreviated, they are: (1) Medical history and physical examinations: (2) Medical records: (3) Preventive medicine in industry, (4) Plant surveys: (5) Protective clothing: (6) Functions of an industrial hygiene laboratory, (7) Immunizations in industry, (8) Temperature, humidity and air movement, (9) Industrial noise, (10) Fatigue, (11) Medicolegal aspects, (11) Rehabilitation of the alcoholic, (12) The occupational back, (13) Surgical considerations in industry, (14) Inplant feeding in industry (15) The nurse in industry, (16) Sanitation, water supply and pollution, (17) Washing facilities, toilet facilities, atmospheric pollution, (18) Safety, (19) Practical application of psychiatry, (20) Chemical health hazards, (21) Problems of acute poisoning.

These chapter headings may vary somewhat from other texts in this general field of medicine and industrial hygiene. Still, they are indicative of current thinking. It might serve industrial nurses well to attempt to lay out or tabulate the various functions they perform, and see how closely their own activities or partial responsibilities match the preceding chapter contents. Some may find that they are doing things not included above; that other plant personnel cover all or only some phases, and that certain areas do not fit into the scheme of organization in their own plants. The effort may pay off by highlighting some aspect which warrants further examination.

JUST FOR A MINUTE . . .

A LINEMAN replacing a hot disconnect switch, removed his rubber gloves before the job was finished. He contacted a 2400 volt switch terminal and was electrocuted instantly. In the first place he should have not been replacing a disconnect switch while it was hot; but more important, he should have kept his insulating gloves on until the job was finished.

In the investigator's book the preventive steps were listed as (a) deenergize the line by opening the disconnects; (b) don't remove rubber gloves when working around 2400 volts. He might have added: "Don't work safely half the time: you can be killed during the other half."

MINIMIZE . . .

THAT'S THE MOST we can sometimes do in safety. There are some processes that can be dangerous without the source of the danger ever being discovered. The safety man, however, can minimize the hazard of an operation without knowing the exact cause of the danger.

Take this accident for example. Two 12,000-gallon tank cars were being loaded with xylol by a rackman helper. The product was delivered to each car through a short length of 2-inch steel pipe which had an aluminum slip tube extension on the outer end. After approximately 15 minutes, one of the tank cars was full and the employee shut the valve on the loading line to that car. He then walked out on the drop platform to observe the liquid height in the other tank car. As he reached the dome and prepared to look into the car, he placed his hand on the aluminum slip tube to support himself. At that instant he heard a rumble and the explosion blew flames into his face. He jumped from drop platform but received first and second degree burns all over his body.

Although a definite source of ignition could not be determined, these steps should be taken to minimize certain hazards: 1) Initiate routine inspection of electrical ground wires at regular intervals, including a suitable record system. 2) Change from splash to submerged loading on all products having an open cup flash point of 150°F. or under. This recommendation applies only to those products loaded through open domes. 3) Install jumper wires on all slip and swing joints. 4) Install diamond plate on all swing platforms on wooden section of rack and bond to grounding system.

This applies to other operations beside the xylol loading described here. Protective equipment and safety precautions will always cut down the danger of an accident, even if they don't eliminate the source.

Learning . . . . . the hard way

1 - 2 - 3 - 4 - HIKE! . . . OOPS!

A FOOTBALL TEAM isn't the only group that can fumble when it gets its signals mixed. For instance, a roustabout gang was preparing to put antifreeze into a multicylinder gas engine. The winch line on the gang truck was used to hold the barrel of water on the tailboard of the truck. When the barrel was lowered to the ground, it turned upside down, spilling the water.

Employee attempted to free the winch line so that the gang could right the barrel. Because of a misunderstanding of signals, the winch operator took a strain on the winch line while the employee's finger was between the line and the tailboard. The line caught the employee's index finger on his left hand, severing half of the first joint. All signals should be given clearly and they should be mutually understood before any type of operation is started.

A Seal of Approval for Sanitation Products

PROPOSALS TO establish a carefully policed "seal of approval" for products used in the sanitary supply industry received support from representatives of all phases of the industry at the first annual meeting of the Industrial Housekeeping Safety Guild last November.

Those attending a symposium of manufacturers, distributors and consumers were careful to limit their support to a seal of approval which would guarantee certain minimum standards of performance in materials or equipment bearing the Guild label.

Participants in the discussion quickly vetoed suggestions that the Guild's seal of approval might specify the ingredients of tested products and their proportions.

"If you tried that you would find it next to impossible to get any honest manufacturer to give you his formulation," warned E. Willard Merritt, general sales director of the Walter G. Legge Co., New York floor polish manufacturers.

Consumer and distributor representatives both pointed out that knowing the active ingredients of a product, or the proportions of those ingredients, would mean little to them, since lack of one ingredient might be offset by the presence of another. Dan Granato, service manager for Sharp and Dohme, Philadelphia branch of Merck & Co., asserted that overall claims as to the quality of a product must still depend largely on the end use to which the product is put.

Thomas M. Shea, chief design engineer for Sharp & Dohme, brought up the point that materials and equipment account for only 15 percent of the maintenance cost of industrial plants, the rest going for labor. As a result, he said, the emphasis in buying a product must be on its ability to help do its given job faster and more effectively. The end user, Shea added, would welcome a guarantee, such as the Guild seal of approval might give, that a maintenance supply item had been tested and had given a certain minimum standard of performance.

Seymour Chase, sales manager for Federal Fibre Corp., of Long Island City, agreed that the end user is interested primarily in results. "The average buyer a salesman sees wants to know if his is a quality product, how much it costs, and whether it will do what the makers say it will do," he asserted. The Guild seal of approval, he added, should say that a product will perform in actual use as its manufacturer says it will, and that it actually contains what the manufacturer says it does. The problem of policing the quality of approved products, Chase, continued, is to see that the manufacturer maintains the quality shown in the samples he submits for testing.

Dr. Beloff, chairman of the meeting, reminded the panel participants that the Guild seal of approval would meet another important need, that of eliminating price-cutting through adulteration.

Consensus of the meeting, although no formal vote was taken, was that the Industrial Housekeeping Safety Guild should proceed with establishing a seal of approval for the sanitary supply industry.

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Based on a new principle in detergency!

Regular Use of SCRIPT-OIL Helps Prevent Many Industrial Skin Diseases.

It should be tried in your factory if you have oil eruptions and oil folliculitis among machinists.

Why continue to risk skin eruptions by using solvents to remove paint, tar, pitch, grime, etc., from the skin.

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It can eradicate them *without irritation*

Save insurance costs—Prevent lost time due to dermatoses

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Money back if not entirely satisfied.

SCRIPT-OIL LABORATORIES

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BOSTON 31 (Roslindale Station), MASS.

(For details, use Key # A-28 on card on page 71)

Safety Courses

COURSES IN industrial and traffic safety will be offered in the Spring term by the Cente of Safety Education, New York University. The courses are designed for safety directors, supervisors and others responsible for accident prevention. Subjects of the courses are (opening dates are indicated in parenthesis): Qualifications, Duties & Responsibilities of Safety Directors & Safety Engineers (Feb. 7); Safety Organization: Values & Limitations (Feb. 8); Management & Supervision in Accident Prevention (Feb. 7); Industrial Hygiene & Occupational Diseases (Feb. 8); Operating a Safety Program in Smaller Motor Vehicle Fleets (Feb. 9); Special Problems in Accident Prevention

(Feb. 9); Psychology of Accident Prevention (Feb. 10); Industrial Safety Technology & Instrumentation (Feb. 11).

Students may register for any of the courses during the week of January 31 to February 4 or on the first evening of each course. There is a general registration fee of $2.00, plus an individual fee of $25.00 per course.

Further information may be secured by writing to Dr. Walter A. Cutter, Center for Safety Education, New York University, Washington Square 3, N. Y.

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1953 Frequency Rates

SECRETARY OF LABOR James P. Mitchell has announced that the nation's work injury frequency rate for manufacturing hit an all time low in 1953. Final figures compiled by the Department of Labor indicate that the all manufacturing rate fell from 14.3, the previous record established in 1952, to 13.4 disabling injuries per million man hours worked in 1953. Preliminary figures now available for the first half of 1954, indicate that the improvement is continuing and that a further decline will be reached when the final figures for the current year are received.

"This record," said the Secretary, "bettered our most optimistic predictions, and reflects the substantial extension of safety activities by both industry and the Department of Labor."

According to a survey made by the Department's Bureau of Labor Statistics, the downward trends in injury rates was equally pronounced among the non-manufacturing industries. The construction group, for example, reduced their injury rates for the third successive year to a post war low of 32.9. The telephone communications group established an outstanding record of only one disabling injury per million man hours worked.

The rate for wholesale and retail trade, 12.1, was down slightly from 1952, but was still above the figure of 10.9 recorded in 1949. Other industries in the transportation and utilities, service, and Government groups, showed minor decreases or little change between 1952 and 1953.

Among the individual manufacturing industries, the best showing was made by the petroleum group. The average frequency rate for this group was down 16 percent from 1952.

Although decreases predominated, there were 31 manufacturing classifications for which the 1953 injury rates were five or more percent higher than in 1952. The industries in which the most pronounced rises occurred were: vitreous enameled products, morticians goods, envelopes, electrical appliances, cold finished steel, and ordnance.

The most favorable 1953 frequency rates in manufacturing were: 1.7 for the synthetic fibers industry; 3.0 for miscellaneous communication equipment; 3.3 for synthetic rubber; 3.6 for explosives; 3.8, aircraft manufacturing; 3.9, electric lamps (bulbs); 4.1, electrical equipment for motor vehicles; 4.2, radio tubes; 4.5, rubber footwear; 4.7, ophthalmic goods; and 4.9, tires and inner tubes. In non-manufacturing the lowest rates recorded were: 1.0 for telephone communications; 1.9, insurance; 2.2, banks and other financial agencies; 3.5, retail apparel and accessories; and 4.1 for radio broadcasting.

The average time charge per disabling injury in manufacturing, including deaths and permanent impairments, was 86 days in 1953, representing only a minor change from the 1952 average of 85 days. For temporary disabilities alone the average recovery time in 1953 was 18 days. The standard injury-severity rate for all-manufacturing in 1953 was 1.2 days lost or charged for each 1,000 employee-hours worked. The highest severity rate recorded for any individual industry in 1953 was 13.2 for stevedoring.

TWO PLANTS of the Columbia-Southern Chemical Corporation have been awarded the National Safety Council's "Award of Merit" for completing more than one million man-hours without a lost-time accident.

Corpus Christi, Texas, employees chalked up 1,848,843 accident-free man-hours from Feb. 27, 1953, to April 20, 1954. The Lake Charles, Louisiana, plant worked 1,273,849 hours without a disabling injury from Feb. 26, 1953, to May 18, 1954.

R. L. Hutchison, general superintendent of Columbia-Southern, credits the safety records to "a teamwork job achieved through the enthusiastic cooperation of every worker and supervisor in the two plants."

• • •

COOK RESEARCH Laboratories, a division of Cook Electric Company, Skokie, Illinois has been awarded a Certificate of Merit for Safety Achievement in maintaining an accident frequency and severity rate better than that of industry. The award was presented by a safety service organization. The Laboratories had no lost-time accidents during the year ending June 30, 1954.

• • •

THE TOLEDO, Ohio, plant of the Du Pont Company's Fabrics and Finishes Department recently received an award of merit from the Industrial Commission of Ohio for having operated 7,415,000 man-hours over a ten-year period without lost-time injury. The Toledo safety record brings to ten the number of Du Pont Company installations that have operated for ten years or more and are continuing to do so without lost-time injury. Working on the principle that well trained people, using every available precaution, can avoid all personal injuries, the company has steadily improved its safety performance over the years.

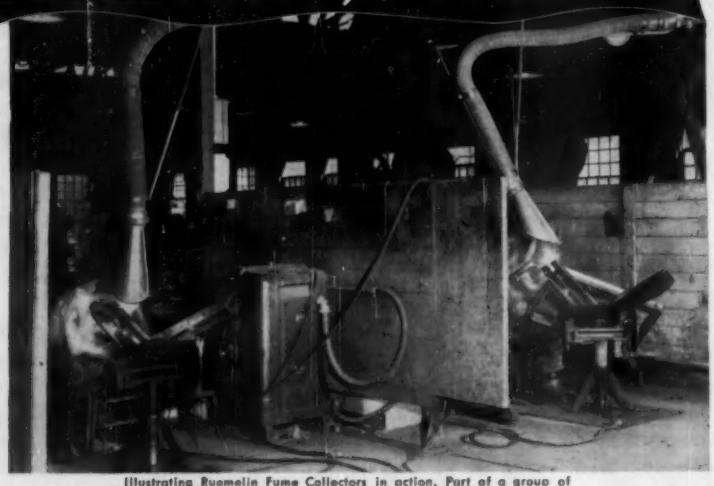
• • •

GENERAL ELECTRIC company has received a safety award from the Washington State Department of Labor and Industries, for its work done at the Hanford atomic energy plant. It was given in recognition of the all-time, company-wide record Hanford recently set by working 9,437,211 man-hours without a lost-time injury.

• • •

THE BETHLEHEM, Pa. plant of Bethlehem Steel Co. has been awarded, for the fifth consecutive year, the National Safety Council's plaque for first place in the Metals Section, Steel Mills Division Group A, 1953–1954 safety contest. The Bethlehem plant sustained only 20 disabling injuries for an accident frequency rate of 0.52 per million man-hours. The Johnstown, Sparrows Point, and Lackawanna plants of the company occupied the next three places in the contest.

RUEMELIN *Welding Fume Collectors*



Illustrating Ruemelin Fume Collectors in action. Part of a group of sixteen collectors at plant of Sterling Wheelbarrow Co., Milwaukee.

Collects fumes at the source! Counterbalanced inlet hood stays in working area automatically. Hoods have great lateral and vertical range for table, positioner or floor use. Thousands in every day service. Write for bulletin 37-E.

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(For details, use Key # A-30 on card on page 71)

THE THOUSAND Day Safety Club for the Lime Industry—now in its 17th year—was bolstered this past fall by three new members. Having completed 1000 days or more of continuous operation without a lost time accident, three lime plants were presented Certificates of Achievement in Safety by the National Lime Association: Springfield, Mo. plant of Ash Grove Lime & Portland Cement Co.; Luckey, Ohio plant of National Gypsum Co.; and Knoxville lime plant of The Standard Lime and Stone Company.

• • •

EMPLOYEES of Lorain Works, National Tube Division, have completed more than 4,500,000 man-hours of work without a lost-time accident to establish a new safety record for this U. S. Steel Corp. plant. Approximately 11,300 employees worked a period of 76 consecutive days at a rate of about 61,000 man-hours per day without a disabling injury. The best previous mark recorded was in 1950 when 4,476,140 man-hours were worked without a lost-time accident, a period of 66 consecutive days. In announcing the record, Robert Urquhart, general superintendent, stated, "Our latest success is the direct result of the interest and cooperation that have been devoted to our safety efforts by our management group, the Joint Union-Managemen Safety Committee and all of our employees over a period of many years."

• • •

A UNIQUE record in construction safety was set by the John A. Volpe Construction Co. at the Limestone Air Force Base at Limestone, Maine, where the firm completed a contract for the Strategic Air Command with no lost time accidents for the entire project. During the 70-week construction of seven hangars, craftsmen in the masonry, carpentry and laboring trades worked more than 49,000 accident-free hours.

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DUPOR WATER COOLED

SMOKE MASK

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H. S. COVER, SOUTH BEND, IND.

"Respirators for Industry since 1894"

(For details, use Key # A-21 on card on page 71)

In recognition of outstanding safety records made during the last year, H. H. Scaff, vice president of Ebasco Services Incorporated, made the annual presentation of Plaques and Achievement Certificates to chief executives of client companies.

Texas Power & Light Company received the Ebasco Gold Plaque for achieving an Injury Index 94.75% below the National Average for the 1953–1954 award year. The Silver Plaque was awarded to the Chattanooga Gas Company for an Injury Index 89.45% below the national figure. In the Ebasco International Division the top award was presented to Compania Nacioñal de Fuerza y Luz in Costa Rica for an Injury Index 78.86% below the U. S. National Average, and the Silver Plaque to Empresa Eléctrica del Ecuador for an Injury Index 35.46% below the U. S. National Average.

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Since different fire hazards require different types of fire extinguishers, PYRENE—C-O-TWO manufactures all types . . . the finest and most complete line on the market today.

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CARBON DIOXIDE • DRY CHEMCIAL • VAPORIZING LIQUID • SODA-ACID • WATER • CHEMICAL FOAM • AIR FOAM

(For details, use Key # A-31 on card on page 71)

The Fire Front

October Fire Losses

ESTIMATED FIRE losses in the United States during October amounted to $57,668,000, according to the National Board of Fire Underwriters. This loss represents a decrease of 15.9 percent from losses of $68,551,000 reported for October, 1953, and a decrease of 10 percent from losses of $64,087,000 for September, 1954.

Losses for the first 10 months of 1954 now total $725,440,000, a decrease of 3.5 percent from the first 10 months of 1953, when they amounted to $751,896,000. These estimated insured losses include an allowance for uninsured and unreported losses.

Stairway Protection

AN OPEN STAIRWAY provides an ideal path for the upward travel of smoke, heated gases and flame, and is the cause of many life losses in fires.

The problem of correcting conditions in existing buildings is not easily solved according to a bulletin of the National Board of Fire Underwriters. There is first the financial angle: the cost of such work is considerable. A second feature is how these enclosures can be put in. It is seldom feasible in an existing building to totally enclose a stairway, but it may be possible to provide a partition and door at the head or foot of a stairway.

The third question is the kind of partition or separation to be used. This will depend upon the protection desired. The primary object is to stop the upward draft. This can be done with almost any kind of partition, even one made of plain glass, but if the partition is of glass or of thin wood, it will not stand up long under fire conditions and may fail before the firemen arrive and get the fire under control.

Suitable Partitions

Detailed recommendations for the enclosure of stairways and elevators in existing buildings are given in the National Building Code recommended by the National Board of Fire Underwriters.

Doors on stairway enclosures must be kept closed to make the stairway enclosure effective in stopping the upward spread of fire.

Tests have been made of several types of partitions, and an approximate rating has been given, in terms of the length of time before flame or fire will go through the partition or the time before the unexposed side gets beyond a dangerous temperature. Partition constructions which have fire resistance ratings of one to four hours are listed in the pamphlet, "Fire Resistance Ratings" and in Appendix A of the National Building Code, both published by the National Board of Fire Underwriters.

Partitions of at least 1 hour fire resistance are very desirable for enclosures to stairways or elevators. A few typical constructions are: 4 inches of brick; good quality concrete blocks; 2-inch solid gypsum blocks; 3-inch hollow gypsum blocks; 6-inch hollow clay tile, plastered; 4 inches of concrete; 2½-inch solid plaster partition with metal studs and gypsum plaster on metal lath; hollow partitions using metal studs with metal lath and ⅞-inch gypsum plaster; 2 x 4-inch wood studs using metal lath and ⅞-inch gypsum plaster (standard mix of gypsum plaster for above ratings is 1 part gypsum to 2 parts sand in scratch coat and 1 part gypsum to 3 parts sand in brown coat); 2 x 4-inch wood studs using standard perforated gypsum lath and ½-inch gypsum plaster with not over 2 parts sand to 1 part gypsum.

Fire Prevention for Plastics Industry

A COMMITTEE ON Fire Prevention has been set up by The Society of the Plastics Industry, Inc. It will develop material for a manual on fire prevention as it applies to the broad field of plastics. This new committee will work closely with the National Board of Fire Underwriters in the preparation of this manual, which will acquaint officials of municipalities and other regulatory bodies with what does and does not constitute a fire hazard in the plastics industry. This manual will also contain do's and don't's regarding "good housekeeping" in a plastic plant.

HOUSEKEEPING'S EXTRA DIVIDEND

RIGHT—Oily rags used by machine operators should be traded in each day for clean ones. Note the disposal can in tool shop is self-closing and made of metal to prevent fire in rags from spreading.

THE PICTURES on these pages tell a story of how one plant keeps itself free of fire-inviting accumulations of waste. Typical of plants where management recognizes excellent housekeeping as an important part of the production effort, the Norton Company, Worcester, Mass., makes this a continuous, tightly scheduled job. And, as shown, the company has the equipment to do it effectively.

Cleanliness and orderliness are without doubt the most important single factor in keeping a plant free from ordinary fires. Fires need fuel, and a small pile of rubbish or a deposit of oil or lint can serve well as a starter. Management is automatically eliminating fire possibilities when it provides and enforces a schedule for clean-up and refuse disposal that is both frequent and thorough. Norton's management sees to it that cleaning keeps ahead of dirt-producing operations.

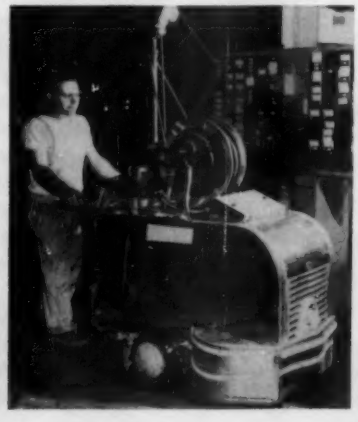
Orderliness is both a product of and an inducement to cleanliness. Good housekeeping practice against fire provides approved covered metal containers in which workers can deposit refuse. Cans should be scheduled to be emptied and their contents trucked away as fast as waste accumulates.

Adequate exhaust and collecting systems must be provided at processes producing combustible dusts, oil spray or heavy fumes, or spray residue.

Cleaning crews must be at hand to dispose of chips, shavings, and other

Large vacuum cleaner machine is used to sweep all plant floors free of dangerous dust.

Then electric scrubber is used to wash all floors for cleanliness and fire safety.



Here, exhaust system removes shavings from planer as they are formed for clean floor.

BELOW—top

Oily chips from machines are centrifuged for oil, then removed.

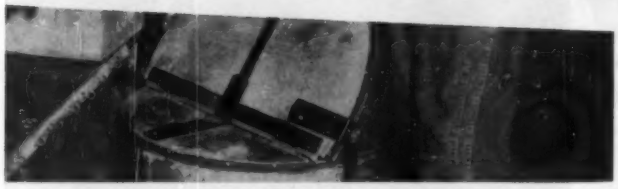
BELOW—middle

Rubbish from concrete pits is disposed of in safe dump area.

BELOW—bottom

Metal waste container is lifted from concrete pit outside plant.

RE PREVENTION!



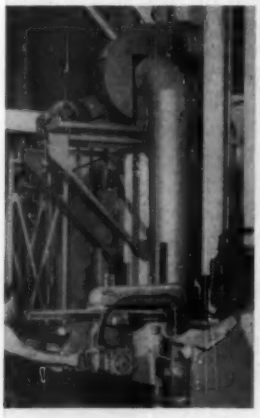
: can collect at machines. ıld also clear out rubbish ɛr benches, stairways, and ıtor pits. A definite sched- leaning combustible de- m beams, walls, fixtures, ɛr hoods and exhaust ducts otection investment.

ɔvercrowding plant areas. n not only aids the spread ut hampers fire fighting. ɛr is wide aisles, kept clear; ged equipment; and neat stock and storage, keeping tops of piles at the required distance below sprinklers. Make certain that neither stock nor equipment block easy access to sprinkler valves, fire doors, or extinguishers.

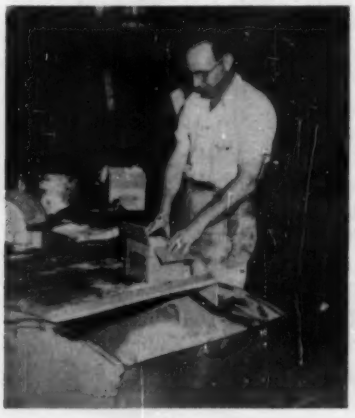
The examples shown here cover many of these safety practices. They are well worth copying or adopting—for their fire protection dividends alone—not to mention morale, accident prevention, personal hygiene, absenteeism and many other factors.

Pictures by courtesy of Factory Mutual Record.

ɛr ducts draw sawdust from cir- safe disposal outside the plant.



Excelsior used for packing is kept in self-closing bins, with heat sensitive mechanism.



Aircraft engineer is shown checking installation of extinguisher piping on aircraft engine. Dibromodifluoromethane will flow through piping in case of fire.

TESTING A NEW EXTINGUISHANT

FLUORINATED hydrocarbon compounds, similar to those that act as cooling agents in refrigerators, freezers, and air-conditioning equipment, are said by the makers to bring new safety, easier handling, and equipment-weight savings in fire-fighting equipment for use on airplanes.

With low toxicity, negligible effect on metals, and the ability to deliver a very high volume of flame-smothering vapor at all flight temperatures, the fluorinated compounds are being made standard equipment on the new Lockheed Super Constellations and may be adopted on other commercial and military transports powered by air-cooled reciprocating engines.

Tests indicate the compounds are very effective in quelling fire involving either flammable and explosive fuels or electrical equipment.

The new fire-fighting system, first employed by Lockheed, is a high rate discharge system (HRD) developed by the Civil Aeronautics Administration technical center at Indianapolis. The standard fire-fighting agent supplied by Lockheed on all delivered planes is Du Pont "Freon-12B2" dibromodifluoromethane.

Protection Extended

One of the most significant modifications adopted in the installation is extension of fire protection to Zone 1, or the piston area, located in the forward end of the engine nacelle. Earlier extinguishing systems were designed to protect only Zones 2 and 3, but a recent civil air regulation makes Zone 1 protection mandatory. (Zone 1 includes the cylinders, while Zone 2 includes the fuel pump, starter, generator, and allied equipment. Zone 3 encompasses oil separators, plumbing, etc.)

The theory behind former protection of only Zones 2 and 3 was that fires originating in the forward areas of the engine were isolated from Zones 2 and 3, and it was believed that the high air flow in the forward part of the nacelle would automatically extinguish a piston area fire by "blowing it out."

Dibromodifluoromethane was chosen because of its ease of handling and comparatively low toxicity, the latter a negligible in-flight problem but an important consideration in ground handling.

Underwriters' Laboratories, Inc., has conducted tests on the toxicity of dibromodifluoromethane vapors. They classify this hydrocarbon as falling in Group 4 in their "Com-

(Continued on page 59)

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STORAGE

CONSERVATION VENTS AND FLAME ARRESTERS

provide pressure and vacuum relief, and breathing is retarded to reduce evaporation. Flame Arresters prevent passage of flame to interiors. All aluminum construction, or special materials on order. Approved and listed by Underwriter's Laboratories and Associated Factory Mutual Laboratories.

DRUM BUNG FITTING

a combination fill and vent which provides vacuum and automatic pressure relief, and guards against explosion under fire conditions. Double perforated metal baffle extends into drum and permits refilling without danger of interior fire.

SELF-CLOSING AUTOMATIC FAUCET

has flame arrester within the body at outlet; valve is outside body where it is not distorted by excessive pressure. Standard gaskets are Buna N, Neoprene or Thiokol; other materials upon request.

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SAFETY TRANSFER PUMP

Designed for complete protection against explosion and fire hazards the PROTECTOSEAL Transfer Pump has three flame arresters built into it: at the spout, above the bung adapter and at the strainer inlet within the drum. It also provides for vent and pressure relief through protected openings.

The pump is self-priming and is constructed of special aluminum alloy with a brass telescopic tube. It is quickly and easily attached to drums with bung openings as small as ¾" by hand swivel grip connectors and the telescopic tube permits pumping from either the side or end openings of 30 gallon and 55 gallon drums.

SEE OUR EXHIBIT—BOOTH 674
Plant Maintenance & Engineering Show
Jan. 24–27, 1955. Chicago Amphitheatre

PLANT USE

A—SAFETY CANS—Double concentric fire baffle inside base of spout. Spring loaded cap makes tight closure; provides pressure relief. Explosion-proof and leak-proof.

B—PLUNGER CANS—When plunger is depressed, the fluid rises into dasher to moisten swab. Excess liquid flows back into body. Dasher is a fire-protective baffle and unit is self-extinguishing.

C—WASH-DIP TANKS
Sturdy, square, electrically seam-welded design with lugs above liquid level to hold basket for draining. Top has full-length hinge and is equipped with a fusible link which drops cover automatically in case of fire.

D—OILY WASTE CAN
Tight, seam-welded body with snug fitting cover which closes automatically to smother fire. Cover opens wide with slight foot pressure on full width treadle.

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☐ Safety Production Cans for Plant Use

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Company_____
Address_____
City_____ Zone_____ State_____

(For details, use Key # A-32 on card on page 71)

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Member
National Safety Council
(Use Key # A-33 on Inquiry Card on page 71)

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2727 W. Huntingdon St., Philadelphia 32, Pa.
(Use Key # A-34 on Inquiry Card on page 71)

inside the trade

The Goshen Manufacturing Co., Inc., has appointed new sales representatives in line with its expanded nationwide coverage on ladders. Robert M. Rink, president, has listed the following appointments: Chester P. Holt, Atlanta, covering Alabama, Florida, Georgia and eastern Tennessee; W. E. Davis, Jr., High Point, covering North and South Carolina and Virgina; Charles J. Reilly, Los Angeles, covering Arizona, California and Nevada; Howard Mfg. Co., Kent, Washington, for the Pacific Northwest; and Carlos W. Stone, Salt Lake City, for ladders in Utah, Wyoming, Montana, Idaho and western Colorado.

Boyd Blomberg has been named manager of the newly-created audiometer division of the Beltone Hearing Aid Company. He will supervise the manufacture and sales of the company's hearing test instruments.

Multi-Clean Products, Inc. of St. Paul, Minnesota has announced expansion of its manufacturing, cooling and storage facilities for floor finishes and floor cleaners. The move will increase the company's liquids production by nearly 25% in 1955, according to N. H. McRae, President. A new separate steam and hot water system will greatly aid in maintaining uniformity and quality control, so important in the manufacturing of waxes and cleaners.

Albert F. Metz, chairman of the board, and chief executive officer of The Okonite Company, manufacturers of electrical wire and cable, has been elected president of the National Electrical Manufacturers Association. Mr. Metz, former treasurer of NEMA, and a member of the NEMA Board of Governors for several years, succeeds J. H. Jewell, vice president of Westinghouse Electric Corporation, Pittsburgh, Pa.

The Donaldson Power Ventilator Company, manufacturers of powered roof and wall ventilators, has enlarged its manufacturing facilities in North Hollywood, Calif.

Announcement of the election of Raymond J. Casey as Executive Director of the National Automatic Sprinkler and Fire Control Association has been made by Arthur M. Lewis, Chairman of the Executive Committee. Casey was formerly Director of Labor Relations.

The Association also reported the election of Pickard E. Wagner as Director of Public Relations, and A. G. Woelfel as Secretary-Treasurer.

Robinson Aviation, Incorporated, vibration and shock control engineers, Teterboro, New Jersey, announces the appointment of the following new manufacturer's representatives to provide engineering service for Robinson's Airborne and Industrial Divisions: Associated Engineering Service, Inc., One Thomas Circle, N. W., Washington 5, D. C. (for Dist. of Col., Maryland, Virginia); Engineering Sales Co., 3592 Milwaukee Ave., Chicago 41, Ill. (for Iowa, Wisconsin, Indiana, No. Illinois); Engineering Sales Co., 6635 Delmar Blvd., St. Louis 5, Mo. (for Missouri, Kansas, Nebraska, So. Illinois).

Future plans of the Towmotor Company are centered around a new plant designed to streamline production facilities so as to supply the increased demand for materials handling equipment. In addition, the new plant will make space available in existing buildings for expanding research and development activities. The new Cleveland plant will add 155,000 square feet of space, and permit centralizing of departments in the main plant area.

Increasing problems caused by disposition and treatment of waste materials by industry have prompted Kaighin & Hughes, Inc., piping and mechanical contractors, to organize an Industrial Wastes Division with Edmund B. Besselievre as its manager. The new division will be equipped to provide all services, including design, engineering and contracting to solve waste materials problems.

H. A. Dietrich has been named manager of the Chicago District of Burgess-Manning Company, manufacturers of industrial noise abating equipment. Under a new national sales organization plan, announced by Ralph L. Leadbetter, President, company sales organization will consist of three primary districts, Chicago, New York and Dallas, with S. G. Paddock, manager of the Dallas Division, directing and correlating the complete sales operation.

W. A. Carroll, Jr., has been named district manager of the New York District, which includes the Eastern states and the Pittsburgh sales territory. R. T. Oliver has been assigned to New York District sales.

New Extinguishant

(from page 56

parative Life Hazard of Refrigerants." Group 4 is defined as "gases or vapors which in concentrations of the order of 2 to 2½ percent for durations of exposure of the order of 2 hr. are lethal or produce serious injury." Examples of other Group 4 refrigerants include: dichlorethylene, methyl chloride and ethyl bromide. All of these products are less toxic than chloroform or carbon tetrachloride which Underwriters classify in Group 3.

The four air-cooled reciprocating engines are protected with a total charge of 76 pounds of "Freon-12B2," stored as liquid under pressure of 600 pounds of nitrogen in four 1045-cubic inch spherical containers. Pairs of the containers are located in the left- and right-side inboard nacelle areas, with each container normally serving one engine. Each pair of bottles of the liquefied gas, however, is interconnected by valving so that either of the pair in the left nacelle, for example, can be used to combat fire in either engine on the left wing.

From the spherical storage tanks, one and three-quarter inch steel tubing carries the fire extinguishing compound to each nacelle, where it is proportioned properly by the discharge nozzles in Zones 1, 2, and 3, and in the engine induction system. A conventional nozzle and spraybar are used to distribute the fluorinated hydrocarbon in case of a combustion heater fire.

One of the most important advantages of the HRD fire extinguishing system rests in the fact that it extends protection to the Zone 1 area with no significant weight increase in equipment such as piping and discharge nozzles.

Gages for checking pressure of the extinguishing agent are located on each of the four spherical tanks, and special thermal relief valves on each container provide an extra safety margin. Indicators visible from outside the plane make it easy to determine whether the containers have been thermally relieved.

Picture by courtesy of Lockheed Aircraft Co.

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(For details, use Key # A-35 on card on page 71)

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(For details, use Key # A-36 on card on page 71)

Packaging & Materials Handling Show

With the opening sessions for the Short Course in Packaging and Materials Handling, co-sponsored by the University of Illinois, the Society of Industrial Packaging and Materials Handling Engineers formally launched its 9th annual National Meeting.

Divided into two sections—one on Fundamentals of Packaging; the other on the Fundamentals of Materials Handling—unnecessary waste in time, labor and breakage control were emphasized as important considerations for sound business operation. In discussing "Cutting Costs in the Shipping Room," Elaine R. Pitts, Packaging Engineer, Sperry and Hutchinson Company, Chicago, said, "It's always possible to pack to prevent damage—the trick is to prevent damage and control expense without costly *over*-packing." Miss Pitts pointed out that the principal areas of savings are in time and materials. Irvin L. Reis, Lecturer in Industrial Engineering, University of Illinois, said, "Materials handling activities often account for up to 35 to 40 per cent of all production costs, and some instances show where that figure has been as high as 62 per cent."

In discussing price to the retail customer, Joseph A. Burnham, Manager, Warehouse Services, at Marshall Field and Company, Chicago, is of the conviction that when increased cost of a product adds nothing to its value, management owes it to its customers to maintain an operation that will keep pricing common with most businesses and in line with quality of merchandise. Burnham said that his company "in nearly all retailers, has been experiencing a profit squeeze. We have been wrestling with this cost-of-handling problem. We've done a good bit of rearrangement of stocks to facilitate access, and to make the relative placement of goods more rational. We've done an extensive housecleaning job to weed out dead stock. We've cleaned up our warehouse to reduce soilage. We've reduced congestion in stock areas. We've built some shortcuts into our system for handling merchandise ordered for a particular customer." Among other things, it was pointed out that acceptable prepacking proved a real saving as well as a customer service, since merchandise stays cleaner and chances for damage are reduced.

In discussing "Modern Handling Methods from Old Plant Layouts," L. A. Seversen, Manager Warehousing Division, Central Scientific Company, said: "The age-old, ever changing, never ending problem of old plants and modern handling seems to be one of the great challenges of the day. Recently constructed, modern-type of building plants appear to have no serious problems, and the general trend of thinking by management leads one to believe that new buildings are the answer to all problems. I, for one, do not agree completely. It is true that handling is greatly facilitated by one-story, specifically designed buildings, and that old, multi-story buildings cannot, in most cases, compare percentage-wise in the efficiency of modern handling. I do feel, however, that with all of the new building equipment presently available that many industries can economically operate efficiently in their present facilities."

Exposition

The 9th National Industrial Packaging and Materials Handling Exposition was held in conjunction with the SIPMHE meeting. Approximately 100 exhibits featured a complete range of shipping containers; manual and power-operated industrial trucks and materials handling equipment; container closing, sealing and marking equipment, devices and supplies; conveyors; interior packaging and cushioning materials; corrosion, rust preventive and inhibiting materials, equipment and methods; packaging and wrapping materials and equipment; systems, equipment and supplies of direct interest to packaging and materials handling engineers.

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(For details, use Key # A-37 on card on page 71)

transportation safety

CARGO SPACE HEATER

PRODUCTION OF A LOW COST, permanently-mounted cargo space heater for full time cargo protection in truck and semi-trailer vans is announced by the Rue R. Elston Co., Inc., manufacturers of commercial motor freight heating equipment.

Termed the "Elston X-1000 Series," the L.P. gas-fired heater has a 16,000 BTU capacity and can be controlled either manually or thermostatically (optional). A 20 pound propane bottle will last 31 hours at continual operation—with thermostatic controls, the unit will burn up to 58 hours on a single tank.

The heater consists of two basic units—heater assembly and bottle carrier—and, according to the manufacturer, the cargo heater can be permanently mounted in a truck or trailer van with very little effort.

Dimensions of the heater are: height, 59 inches; width, 16 inches; depth, 8 inches, including heater guard. The unit weighs 85 pounds. All models comply with I.C.C. flue-vented cargo space heating rules.

For full details, use Key number TS-10 on inquiry card on page 71.

Better Headlights . . . Safer Driving!

A NEW TYPE OF sealed beam headlamp, designed to make night driving easier and safer, has been unveiled by the Automobile Manufacturers Association.

The improved design is the product of a 4-year cooperative engineering effort by American motor vehicle and headlamp manufacturers, working closely with public officials in the states and provinces of Canada. A similar program produced the present sealed beam design introduced in 1939.

Development and testing work has been completed and the new lamp now is ready for production. It is completely interchangeable with sealed beam lamps presently in use, and will be adopted as standard equipment by all motor vehicle manufacturers in the United States and Canada during the 1955 model year.

Three major improvements are incorporated in the new design:

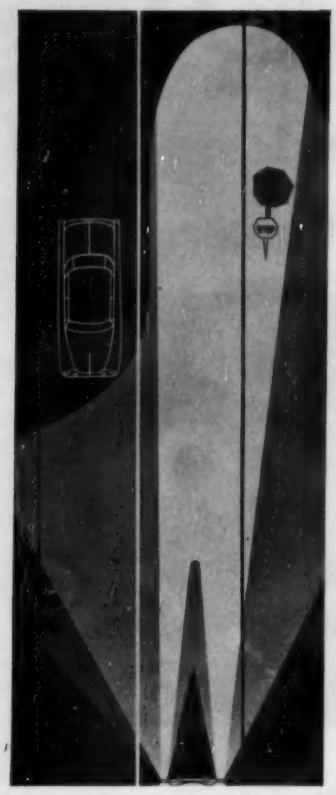
1. Better distribution of light on the roadway. The lower beam is most noticeably improved, giving as much as 80 feet more seeing distance along the right side and shoulder of the road.

2. A sharp reduction in stray light radiating upward from the lower beam filament. This change greatly improves night seeing ability in fog, rain, or other adverse weather conditions, and lessens the possibility of glare.

3. More light throughout both beam patterns.

Stray Light Controlled

The stray upward light from the lower beam has been controlled by the use of an opaque cap or shield accurately positioned over the lower beam filament, and by changes in lens design. The filament cap blocks undesirable rays of light coming di-



New sealed-beam headlights concentrate light on right side of road, further ahead, and control glare areas, marked in gray.

rectly from the filament, but does not interfere with the main beam formed by the reflector.

To get improved light distribution, increased seeing distance, and more light, the lamp designers made other modifications in the lens and added 5 watts of electrical power to each beam. The present 35-watt lower beam has been stepped up to 40 watts and the upper beam wattage has been raised from 45 to 50. This provides additional light ahead of the vehicle, but stays within the existing statutory limitations on beam candlepower.

Lighting engineers demonstrating the new design stress the importance of headlamp aiming. For the motorist to enjoy the maximum advantages of lamp design, whether it be the old or new sealed beam type, he must make sure the aim is right and that lenses are clean. Headlamp aim, say engineers, should be checked periodically as a part of regular vehicle maintenance.

A basic precept in the original sealed beam program was to make aiming easy and accurate. The new lamps are aimed by the same simple procedure. Also, like the present sealed beam unit, the new type is constructed as a single unit, hermetically sealed against dirt and moisture to assure long and efficient life.

Upward "Spill" light through which driver cannot see well is reduced by lower beam lamps. Note dotted line of driver's vision.

History of the Program

Development of the improved lamp grew from the fact that night driving conditions have changed significantly during the past 15 years, the Association reports. The number of motor vehicles in the United States has doubled since World War II. As a result, the average driver at night must keep his headlights depressed for oncoming vehicles much more of the time than was the case when the present type of sealed beam lamp was introduced. The primary objective of the cooperative industry headlamp improvement program, therefore, has been to increase the seeing distances provided by the lower beam.

The program was initiated by the Engineering Advisory Committee of the Association in September of 1950, at the request of the Engineering Committee of the American Association of Motor Vehicle Administrators, which is composed of officials responsible for the administration of motor vehicle regulations in all of the states and territories of the United States and the provinces of Canada.

Responsibility for the program then was assigned to the AMA's Vehicle Lighting Committee, composed of engineering representatives from the various vehicle manufacturers. Actual engineering development work was delegated to a special subcommittee of engineers from 5 producers of motor vehicle headlamps. The new design worked out by the two committees received the unanimous approval of the administrators at their annual meeting in October of 1953.

Revised wording of the headlamp provisions of the Uniform Vehicle Code, permitting use of the new headlamps, was approved by the National Committee on Traffic Laws and Ordinances, June 28, 1954.

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However, before the new lamps may be installed on new motor vehicles as original equipment, restrictive statutes in some states must be changed. These statutes, which govern the type of lighting equipment that may be installed on motor vehicles, apply to specifications for the sealed beam lamps now used. The new lamps, therefore, would be in technical violation of some of these statutes. To legalize use of the new lamps, 22 jurisdictions must pass corrective legislation in 1955. Vehicle manufacturers, the Association reports, are hoping to be able to start factory installation of the lamps by mid-year.

Picture and charts by courtesy of the General Electric Co.

Snow Melting Systems

FLICK A switch and watch ice and snow melt away from driveways, roads or sidewalks! With a system of pipe embedded in the pavement, the ice and snow melt away when a heated fluid is circulated through the pipe coils.

Instead of getting out snow shovels, plows, tire chains, ashes, chemicals, sand, sweepers or other equipment, the owners of snow melting systems merely throw the switch that starts the heating and circulating equipment. Even that is unnecessary in some installations where the starting is done automatically by photo-electric cell controls or other devices.

The fluids are light oils or permanent antifreeze solutions. They vanquish the ice and snow as it falls, by conduction. In addition to averting the labor of snow removal, the systems help reduce maintenance costs due to slush and water being carried into buildings. Accident hazards are reduced and good will created.

At industrial plants, slowdowns from traffic tieups are reduced. The systems are also used in the sidewalks for stores, hotels, banks and other structures. They may be used at filling stations and airports. At the exits and entrances on high speed highways, the systems have great value for reducing hazards and keeping traffic moving. Many of these transportation links are on grades and become impassable unless kept clear.

The Highway Toll

THE NATION'S organized safety educational and enforcement pressures are at last beginning to make a dent in the annual highway death toll, according to Arthur S. Johnson, Director of the Institute For Safer Living. He said that more than 1,400 persons are now alive who would not have been if the fatality figures of 1953 had been repeated in 1954. Although the number of motor vehicle miles traveled this past year has climbed three percent, motor vehicle deaths have declined about six percent.

Dent Pitifully Small

However, Mr. Johnson grimly emphasized that the dent remains pitifully small. He predicted a minimum of 36,000 traffic deaths in 1955, or an equivalent of six fatalities per 100 million vehicle miles driven.

He pointed out that if the present highway death rate is permitted to continue during the next 20 years, 800,000 persons, equal to one tenth of the population of New York City will be killed, and the number of disabled and injured will equal the total population of all New England, New York and New Jersey.

He stated that many individuals and agencies in the safety field are now working hard to establish new concepts of engineering, enforcement and driver education that will be geared to meet the mushrooming growth in driver population and vehicle miles traveled. Until these improved methods are found and put into effect, Mr. Johnson warned that there can be no great hope of rolling back the flood tide of life and property destruction on the highways.

and you can improve their record through the simple expedient of establishing a Safe Driver Awards Program. Your company's emblem becomes a warm handshake for the driver through public RECOGNITION of his capabilities and loyalty.

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(Use Key # A-39 on Inquiry Card on page 71)

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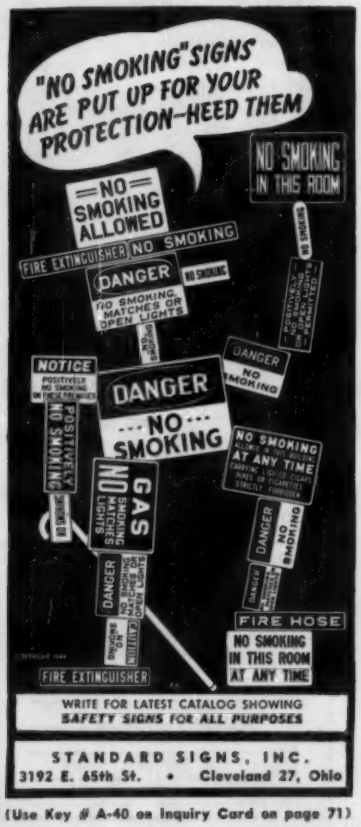

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(Use Key # A-40 on Inquiry Card on page 71)

Supervision of Youth

ALTHOUGH MUCH has been written about good supervision of workers generally, very little of such information has been specifically directed to the supervision and safety of young workers. Yet, each year a million and a half young people under 20 take their first jobs.

As a guide to on-the-job supervisors of young workers, the Bureau of Labor Standards of the U. S. Department of Labor has recently published a 16-page pamphlet, "The Youth You Supervise." The first part takes a fresh look at what youth are like and what makes them that way. The second part contains some reminders of what this means to those who supervise them at work. Included is material on the relation between safety and supervision.

A limited number of copies are available free from the Bureau of Labor Standards. Quantities can be obtained from the Superintendent of Documents, Washington 25, D. C., for 10¢ a copy or $7.50 a hundred.

Act Your Age!

A NEW HIGHWAY safety booklet which depicts drivers who act like children at the wheel of a car as a major cause of automobile accidents has been released. The new booklet paraphrases the story of an award-winning movie, also entitled "Look Who's Driving," which has twice won national recognition as the top traffic safety film of 1954 and was selected for showing abroad at the Venice and Edinburgh film festivals. "Look Who's Driving" is the story of Charlie Younghead, an average American motorist who wonders why so many of his fellow drivers act like kids when driving. Once, though, Charlie loses control of himself and he, too, becomes a child at the wheel, resulting in a crash that nearly costs him his life.

In a psychological approach to highway safety, "Look Who's Driving" pictures improper attitudes that result in bad driving practices as the childlike behavior of motorists who don't act their age behind the wheel. Illustrations in the booklet are exact reproductions of scenes from the movie.

Oil Inspector's Manual

THE 28TH EDITION of the Fisher/Tag Manual for Inspectors of Petroleum is now off the press. The 220-page manual now gives all the essential details for 35 of the most widely used tests for the basic physical and chemical properties of petroleum and its products, such as gravity, color, viscosity, distillation range, vapor pressure, gum content, sulfur, carbon residue, flash point, water and sediment, melting point, cloud and pour points, consistency.

The most useful of the conversion tables adopted internationally in 1953 are reprinted in full in the manual; others are abridged. A variety of other tables have been added so that the inspector has everything he needs in one handy volume. There's a complete cross-index and a separate numerical index to the official ASTM methods used in the book.

The book is available for $1.75 from Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

What's New...

For your convenience in obtaining descriptive literature of products listed here, use the Reader's Inquiry Card. Just write in the code number given with each item. Or send written requests to:

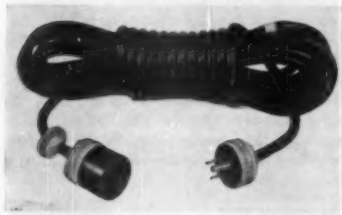
Service Dept.,
SAFETY MAINTENANCE & PRODUCTION

SHORT-TYPE SILENCER

(Use Key # 764 on Inquiry Card on page 71)

A NEW TYPE of silencer, designed for use on the intake and discharge of centrifugal blowers where length is a limiting factor, has been announced by Burgess-Manning Company. It may be used also to silence high frequency noise.

Known as the ACA Series, this snubber is an absorption type silencer. Air flow is channeled through an annular passage which is lined with acoustically transparent tubes, backed up with deep layers of highly efficient sound absorbing material. The silencer is specifically designed for places where diameter is not a problem but length must be kept to a minimum. This series is designed to handle relatively moisture free air up to 200°F., but can be used for considerably higher temperatures, with use of special sound absorbing materials.

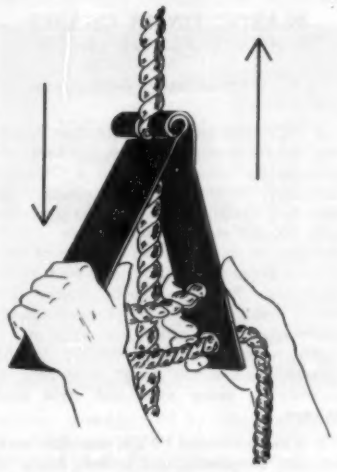


GROUNDED EXTENSION CORD

(Use Key # 765 on Inquiry Card on page 71)

A COMPLETELY shockproof, grounded 3-wire U-blade extension cord set is being made by the Rodale Mfg. Co., Inc.

This Grounded Extension Cord Set has been especially designed to meet the new grounding requirements which go into effect on January 1, 1955, and will accommodate the new 3-wire caps which will be components of many portable tools and appliances. Features of the new cord include an armored cap and connector with metal cord clamps, and #16-3 Type S.J. Heavy Duty Wire. Available in lengths of 10, 25, 50, and 100 feet, the rating for the cord is 15 Amperes, 125 Volts. It is Underwriters' Listed.



LIFELINE SHOCK ABSORBER

(Use Key # 766 on Inquiry Card on page 71)

A REVOLUTIONARY new safety device for men who work in high places has been developed by the Rose Manufacturing Co. The product, the Safe-Hi Rope Grab, can be used anywhere that a vertical rope can be hung through the working area. It is a convenient metal gripping device which attaches instantly around any ¾" manila rope. When attached to a safety belt by means of a safety line, its special design acts to absorb the shock of a fall, yet in no way will it weaken itself or the life line on which it is attached.

The grip is secured by detaching the two metal strips from each other at the top curved joints, allowing the rope to be slipped between the strips into the rope hole provided, and reattaching the strips at the joints. The rope grab can also be moved up or down by this easy method. The safety line from a safety belt is laced through the two sets of holes in each arm. The Rope Grab cannot be knocked off accidentally. Its lightweight features make it easy to use, and its extremely high safety factor will greatly reduce injury or death for men who work on scaffolding, swinging stages, structural steel, bridge building and in every other type of work where men are exposed to the hazards of falls.

VERSATILE VACUUM CLEANER

(Use Key # 767 on Inquiry Card on page 71)

A NEW Series 80 heavy duty industrial and commercial type vacuum cleaner is announced by The Breuer Electric Mfg. Co. The machine features a motor or power unit that can be removed from the top of the tank cover. This motor unit can then be converted into a portable electric blower, a pack carried vacuum cleaner, a powerful insecticide sprayer, or an air sweeper for removal of paper and debris. Also a large size tank cover plate is available to fit a 55-gallon drum, therefore converting the capacity of the cleaner to 55 gallons with the addition of a large size filter bag.

Features of the new machine include a new type motor that cannot overheat or burn out when operated under maximum-load, constant-duty conditions. A new type air impeller gives air speeds for cleaning and blowing up to 325 m.p.h. Tanks are 15 gallon capacity for wet or dry pickup, and made of stainless steel. New dust filter bags are designed to remove all seams from the direct air stream and provide maximum filter efficiency with greater filter life. The Series 80 is equipped with four large ball bearing caster wheels and 20 feet of heavy duty, gray, non-marking neoprene covered cable. Three models are available in ¾, 1 and 1½ H.P. sizes.

ODOR & FUME CONTROL

(Use Key # 768 on Inquiry Card on page 71)

DEVELOPMENT OF an efficient, low-cost process for removing industrial odors and fumes and recovering valuable vapors from plant exhausts is announced by Chemurgic Process Corp. The process, called Siftaire, makes use of activated carbon. It is now available commercially to the following industries for recovery operations or in odor or fume prevention: antibiotics, chemicals, cork, edible oils, fish, fertilizer, insulation, sewage, meat packing, pharmaceuticals, rendering plants, paints and varnish, pulp and paper, plastics, rubber, petroleum, glue, soap and detergents, etc.

Activated carbon is spongelike, containing tiny cavities and capillaries, and is therefore able to attract and hold, or "absorb," vapors. A one-inch cube of carbon may have a surface area of five acres and is therefore an excellent agent for vapor adsorption. Since carbon will not adsorb at high temperatures, cooler air is mixed with the hot exhaust before it reaches the filtering carbon. The Siftaire process also provides a practical method of cleaning or "regenerating" the "filled" carbon. Basically, the cleaning is done by raising the temperature so that the adsorbed vapor is driven off the surface of the carbon. If recovery of the vapor is desired, it can be condensed or collected by other means for re-use. If the vapor is to be destroyed, it is piped to a furnace where complete combustion converts the odorous substance into odorless and colorless carbon dioxide and water.

INSULATED SAFETY SHOE

(Use Key # 769 on Inquiry Card on page 71)

HERE IS A new type of safety shoe the "Thermoliner," developed expressly for hot-mills, refrigeration departments, ice plants, miners, yard gangs, field crews or wherever feet are exposed to extremes of heat or cold. The entire upper is padded with a thin layer of foamed vinyl that contains millions of tiny "sealed-air" bubbles . . . the same principle used to insulate the home against winter cold and summer heat. The manufacturer, Lehigh Safety Shoe Co., finds the vinyl padding superior to other insulating materials because it does not absorb moisture, perspiration, oil or odors.

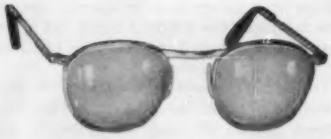
Also available in an 8-inch height field boot and a 12-inch rubber winter-pac. All styles include regular steel toe protection.

PLASTIC FINISH CHASES "SLIPPERY FLOOR GHOST"

(Use Key # 770 on Inquiry Card on page 71)

A NEW 100 percent plastic floor finish, reported to be slip-proof, has just been announced by Colonial Refining & Chemical Company. Called "Super Glazoleum," this new floor finish promises to open an entire new concept of floor maintenance with a definite end to the vexing problem of how to keep floors shiny bright and safe at the same time. The new non-slip product is a plastic resin emulsion which produces an amazingly high lustre—yet slick as it looks, it is anti-slip, according to the makers. This safety factor, it is said, is superior to many other old style floor finishes.

It is recommended for tile, linoleum, cork, terrazzo, magnesite, and cement floors. It resists scuffing, and offers no-maintenance problem—damp mopping removes surface dirt and keeps it shiny new. After months of use, if the user wants to clean his floors down to the base, he finds Super Glazoleum is easy to remove. This new slip-proof plastic is applied with an applicator furnished by the manufacturer. It is available only through factory distributors who make complete inspections of the floors to be treated.



NEW SPECTACLE GOGGLES

(Use Key # 771 on Inquiry Card on page 71)

A NEW LINE of Spectacle-Type Goggles has recently been introduced by Fendall Company. The new goggles closely resemble modern personal glasses, but are of exceptionally rugged construction to withstand severe abuse. The manufacturer emphasizes the new comfort-fit design for greater worker acceptance. New L-1 shaped lenses are also featured in the spectacles. This new shape provides increased safety by closer conformance to the eye area of the face. Its widest point fits well into the nasal area, and its shape follows closely along the side of the nose to prevent entrance of foreign particles.

Produced in a complete range of lens and bridge sizes, the new spectacles are available in metal or non-flammable acetate frames. Metal frames are of non-corrosive nickel silver with full-floating rocking nose pads. Other features are said to include new temple joint construction; new skull temples and new perspiration-proof temple insulation.

NON-FLOOD VACUUM CLEANER

(Use Key # 772 on Inquiry Card on page 71)

A STURDY, light weight wet-dry vacuum cleaner, the new Multi-Clean D-100 is particularly suitable for cleaning smaller offices, showrooms, stores, motels, etc. Owners of smaller buildings and large building managers who have never considered it economical to own a large capacity wet-dry vacuum cleaner will also find the D-100 ideally suited to their needs, according to the manufacturer, Multi-Clean Products, Inc.

Weighing only 29 pounds, this small industrial vacuum cleaner will also have special appeal in situations where it will be operated by women. Capacity of the all-steel welded tank is 3¾ gallons of liquid or nearly ½ bushel of dry material. The motor is said to develop a 71-inch water lift. Ball bearings are permanently sealed in lubricant and no further lubrication is necessary.

An important safety feature is an automatic device that protects the motor against damage from accidental flooding during wet pickup. Before the tank can be filled to the danger point, the safety fuse stops all further pickup until the tank is emptied and the fuse replaced. Attachments include an intake adapter, a standard 8 foot 1½ inch hose, a wand, both floor and hand tools. A wet pickup is available at slight additional cost.

RUST & SCALE SOLVENT

(Use Key # 773 on Inquiry Card on page 71)

A NEW TYPE solvent for rust, scale, lime and corrosion removes these deposits from metal and other surfaces and at the same time strips light oil, grease and dirt films. Made by Brulin & Co., Inc., the Rust & Scale Solvent has innumerable applications, such as the cleaning of metal before painting; cleaning of hot water handling units including heat exchangers, valves, pipes and condensers; cleaning of automotive blocks by submersion to remove grease and rust, but not hard carbon deposits. In the food industry, the solvent will give good results in cleaning stainless steel equipment. It may be applied either with swab, spray method, or by circulating dip tank.

The solvent will etch and neutralize alkali of fresh concrete and thereby give good adhesion for the concrete paint. It is safe to handle, does not give off dangerous fumes and also cleans the surface. Its basic application, however, is in the cleaning of rust and scale from metals, particularly aluminum. The product will not attack gaskets or rubber.

NEW TOWEL DISPENSER

(Use Key # 774 on Inquiry Card on page 71)

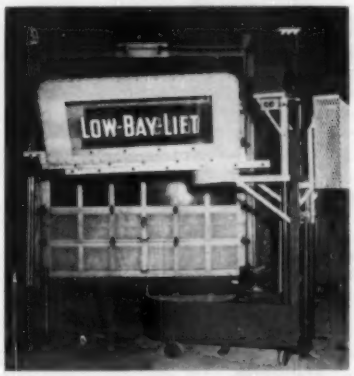
THE NEW Westroll paper-towel dispenser mechanism utilizes a simple crank-feed principle to discourage "raids" on paper-towel supply. Each roll of the continuous paper-toweling is economically metered-out, and savings in servicing and re-filling time are claimed for this newly improved towel dispensing cabinet. West Disinfecting Company's engineers have used nylon worm-gearing in this crank-operated mechanism for smooth, dependable operation. This eliminates the need for lock-feed timing devices more commonly used. No adjustments of the feed-cycle are necessary, and waste is effectively reduced.

Spaced notches along the left edge of the towel, grow closer together as the towel supply is used—providing simple indication and adequate warning that the roll is due for replacement. Each roll of Westroll towels furnishes approximately 660 absorbent sheets—the equivalent of more than four 150-towel packs, of the standard interfolded type.

LOW BAY LIGHTING MAINTENANCE LIFT

(Use Key # 775 on Inquiry Card on page 71)

AN ADDITION to the Barrett line, the Low Bay Lifter, has been developed to handle lighting maintenance at lower



heights. It is designed for industrial plants or offices where the lighting is set low, and also where floor-load rating would not permit the use of a heavy power-driven maintenance unit.

The operation is to maneuver the unit into position; lift to the proper height for the maintenance man to reach the lighting fixture; and then extend the horizontal platform out to the length desired, either with the stiff supporting leg attached to the end of the platform, or with the supporting leg temporarily removed for easier maneuvering.

To lift, there is a push button control that can be operated either from the floor or from the platform. When in position for service, there is also a push button to pump water from the base rubber bulb tank into the service washing tanks mounted on the platform. There are also drains to remove the soiled water from the tanks above, draining back into the base tanks outside of the rubber bulb. It is not necessary to dispose of any water during a day's operation. Canvases mounted on the sides of the platform, act as guard rails for the maintenance man and also as protection against spillage on machines and operators below. A swivel base allows rotation of the main assembly on a 280° arc. Between this rotating motion and the lift available, an operator can reach any light within 20 feet extended position from 8 to 13 feet off the floor. The low-bay lifter is made by Barrett-Cravens Co.

PIPE INSULATION PROTECTOR

(Use Key # 776 on Inquiry Card on page 71)

A PREFABRICATED, specially compounded poly-vinyl chloride acetate pipe covering finish, designed to protect insulation against weather, abrasion, chemicals, mildew, etc., has been announced by Miracle Adhesives Corporation. Named Protektinsul, this covering, furnished to exact size, simply zips on and locks in place with its patented integral all poly-vinyl closure that insures a watertight and airtight longitudinal joint, and provides the ultimate in ease of application. It requires no cutting, fitting, or sewing in the field.

As a cover over the insulation, Protektinsul provides all of the requirements of an excellent exterior finish, indoors, outdoors, and underground, and is available in colors. No painting, refinishing, or further maintenance is required to remove stains which normally develop in service. Oil, rust or dirt can be removed with a damp cloth.

ULTRASONIC INSPECTION & CLEANING

(Use Key # 777 on Inquiry Card on page 71)

THE APPLICATION of ultrasonic vibration to their visible penetrant inspection method with startling improvement in speed and effectiveness, has been announced by The Met-L-Chek Co. The ultrasonic equipment is compact, moderate in price, and simple in operation. It can also be used for general surface cleaning when the ultimate in soil removal is desired for plating, painting and other processing.

High speed vibration greatly accelerates penetration, water washing to remove excess penetrant dye, and development of flaw indications in the inspection of metal, ceramic, glass, and plastic surfaces.

EXTRA-WIDE SCAFFOLD

(Use Key # 778 on Inquiry Card on page 71)

AN EXTRA-WIDE Aluminum Ladder Scaffold will highlight the Patent Scaffolding Company's display of all types of scaffolding and ladders for plant and refinery maintenance and repairs at Booth 640 at the Plant Maintenance Show. This 4'6"-wide scaffold provides users with added stability and extra working room for painting, relamping, cleaning and general maintenance work. Lightweight aluminum components are easy to handle and erect. Base sections are 6' high and other heights are achieved by adding other units of 4' and 5'4". A built-in 24" leg adjustment permits added height adjustment without lifting scaffold. Rubber-tired casters permit scaffold to be moved from job to job.

HEAT RESISTANT PLASTIC

(Use Key # 779 on Inquiry Card on page 71)

OF INTEREST to industry in general, and particularly to the chemical processing, food processing and electrical industries, is a new material known as "Agilene-HT," which consists of ordinary Polyethylene whose molecular structure and such properties as its heat resistance and tensile strength have been altered by subjecting it to a bombardment of sub-atomic particles of high energy. The American Agile Corp. states that the new plastic will withstand temperatures as high as 350° F. and therefore can be used for evaporators and other vessels used for boiling solutions. Also, food, pharmaceutical, and biological equipment, constructed of this new material can be easily and frequently sterilized for cleanliness and sanitation. The excellent dielectric properties of Polyethylene can now be utilized at considerably higher temperatures.

The mechanical properties of the irradiated plastic material, such as tensile strength and elongation are considerably improved. A marked increase in solvent resistance is encountered, and "Agilene-HT" retains all of the traditionally desirable properties of ordinary Polyethylene such as toughness, flexibility, impact resistance, and complete inertness in most chemical environments.

The picture shows (left to right): a conventional Polyethylene beaker at room temperature; conventional beaker after three minutes at 300° F; after six minutes at this same temperature; after eight minutes; after 10 minutes. At extreme right, irradiated Polyethylene beaker after one hour at 300° F.

HAND CLEANER DISPENSER

(Use Key # 780 on Inquiry Card on page 71)

DESIGNED TO make cleaning facilities more readily available in industrial plants or for outdoor workers, an improved dispenser made of unbreakable, corrosion-proof polyethylene with synthetic rubber nozzle delivers metered amounts of waterless skin cleaner. The predetermined amount of cleanser is calculated to clean most soiled hands thoroughly. Withdrawal of the measured quantity is accomplished by simply squeezing the pliable nozzle between two fingers. A swivel mounting mechanism is provided for up-ending the container when refilling. Installed in production areas, the dispenser is said to provide 60-second hand cleaning near machines or work. Its use helps solve the need for additional clean-up stations in the current trend toward horizontal rather than vertical expansion of production areas.

The new dispensers, made by Hammons Products, Inc., are used with a waterless liquid cream containing lanolin and similar emollients and hexachlorophene to guard against dermatitis, drying and chapping. The waterless-type skin cleaner removes all common materials, except lacquers, without the use of water.

PLASTIC GUARD MATERIAL

(Use Key # 781 on Inquiry Card on page 71)

A TRANSPARENT, scratch and abrasion resistant glazing material, suitable for a broad range of safety applications, was recently announced by the Homalite Corp. The new material, Homalite CR-39, is made of thermosetting resins and should be of special interest to safety engineers and equipment designers using or specifying protective glazing. It should also interest architects concerned with buildings where explosion hazards might exist.

Company spokesmen say that the new product is immune to chemical action. Since it is also virtually unaffected by welding splatter, it should find wide application in metal-working. It is easily machined and has "light-piping" and "edge-lighting" qualities, recommending its use in instrument panels and faces. It is light weight and highly resistant to shatter, abrasion and scratches.

Homalite CR-39 is envisioned for use in such applications as safety goggles, and shields, instrument faces, grinding wheel guards, windows for viewing dangerous processes, cab glazing on power shovels and cranes, and numerous similar uses. A free sample is available.

EMERGENCY LOCK RELEASE

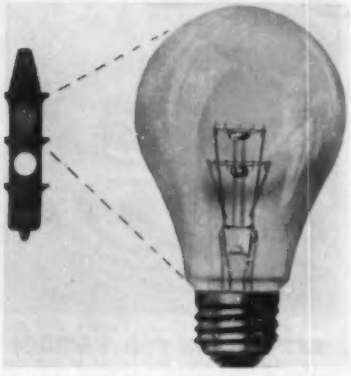
(Use Key # 782 on Inquiry Card on page 71)

A RADICALLY new emergency lock release has just been placed on the market by the Greenline Metals Products Inc. through the national distributorship of American Allsafe Co., Inc. Over the hasp and padlock is a special metal case with glass door. In an emergency, a tap on the glass breaks it and a spring immediately

forces open the hasp below. No key is necessary, although for ordinary use, usual keys may be used. To discourage unauthorized entry, provision is made for the emergency lock to be connected to an alarm bell, annunciator, siren, light or the plant alarm system—any one of which operates when the glass is broken by the attached hammer.

Its uses are manifold. Plant, store or home doors may be equipped with this easy-access emergency lock. It can be used for volunteer fire departments, boiler rooms, to protect any type of switch or emergency equipment. By placing fire extinguishers, first aid kits, or water pails in a closet or box equipped with the Greenline emergency lock release, they are always easily available for inspection or test, yet locked away from prying fingers. In an emergency, no key is needed.

Police and armed force or civil defense officials can protect everything from arms and ammunition to first aid supplies. Hospitals can keep drugs or oxygen tanks securely locked, yet instantly available for emergency use. Used on entrance doors, the locks permit emergency access by police or firemen. Tear gas, carbon dioxide fire extinguishing valves or other mechanical or electrical machinery may be geared to this same emergency lock. A similar lock device can be placed on windows or at other locations which should be locked under normal conditions, yet easily opened for emergencies.



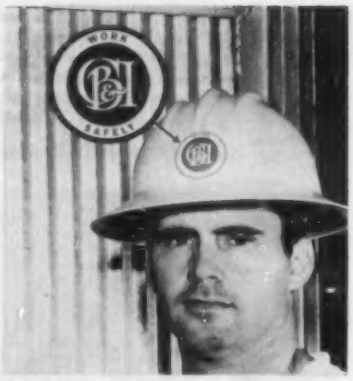
LIGHT BULB SAVES LIVES

(Use Key # 783 on Inquiry Card on page 71)

AN ELECTRIC light bulb with a built in safety device designed to prevent accidents around dangerous machinery or processes, at road intersections, railroad crossings, bridges, airports, etc., is announced by Solar Electric Corp.

The lamp, called the Dual Traffic Signal, contains two filaments: a 50-watt filament designed for 5000 hours life and a 25-watt filament for 8000 hours. When the 50-watt filament burns out, the 25-watt filament continues to burn with a lower light. This light is sufficient to give a warning to the public, but dim enough to warn a police patrol or maintenance department that the lamp needs replacing.

The new 75-watt lamp has a medium base, is enclosed in an A-21 bulb, and may be used in any position.



SAFETY SLOGANS FOR HATS

(Use Key # 784 on Inquiry Card on page 71)

A SELF-STICKING accident prevention sign for use on safety helmets is the newest addition to the W. H. Brady Company's line of safety products. Safety engineers use these handy, low cost signs to put a safety message on every Safety Helmet. They make every workman a walking safety advertisement, because the safety message is at the eye level of every other worker.

Safety Helmet Signs are made with any design or wording, trademark, company name, message, etc., in any size or shape. They can be furnished in any color for ready identification of various classifications of workmen. They come mounted on handy Blue Streak Dispenser Cards and are applied without moistening in a few seconds to any type hard hat—aluminum, plastic, fiberglas, etc. Readers requesting further information will receive a free sample of the self-sticking signs.

INDUSTRIAL FIRE TRUCK

(Use Key # 785 on Inquiry Card on page 71)

THE HIGH-PRESSURE fog method of fighting fires, developed by John Bean Division, Food Machinery and Chemical Corporation, has now been incorporated in a new and radically different industrial fire truck. Designed into the new unit is all the fire fighting punch of a full-size municipal type fire truck—with size and maneuverability engineered for negotiating factory aisles with ease. Using only one-tenth the volume of water discharged under ordinary pressures, the high pressure fog apparatus cools, smothers and isolates flames and is effective against fires in oil, gasoline, lacquers, solvents and all other flammable liquids and materials except magnesium.

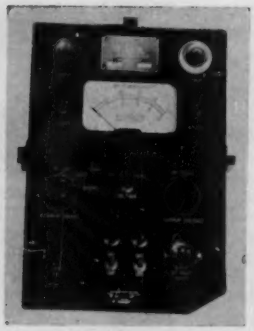
Two fog lines, operating from spring loaded reels, are equipped with trigger controlled fog guns. Each gun is easily handled by one man and is quickly adjusted from distance stream to close-up fog. The truck's 300-gallon tank holds enough water for a 20 minutes of normal fire fighting and the truck also is equipped to pump water from plant water lines or from a straight draft source such as a pond or a cistern. Only 4 feet wide, 140 inches long and 79 inches high, the new truck has a wheelbase of only 76 inches and a turning radius of less than 15 feet. Powered by a 98-hp industrial engine, it can go 25 mph, has four forward speeds and reverse and can climb a 16 percent grade fully loaded. The front end has a heavy duty "bucking head" for pushing through aisles blocked with trays, pallets or other obstacles.

AUTOMATIC EXTINGUISHER

(Use Key # 786 on Inquiry Card on page 71)

COMPACT, self-contained and providing fully automatic fire protection, Firetox units may be installed quickly and easily. The unit is hung from the ceiling on a bracket (furnished) and requires no other parts. No additional piping or intricate alarm systems are needed. The extinguisher goes into action automatically when temperature rises to 165°F. Its solder fuse melts releasing the extinguishing agent (carbon tetrachloride) as a vapor that settles over the fire like a blanket. There is no water or chemical damage and the unit carries the U. L. label.

Firetox offers fire protection for industry, hotels, and institutions, garages, homes, commercial vehicles and powerboats. It is particularly suitable for closed area "danger spots" such as storage rooms, motor rooms, closets, work shops and rooms housing electrical equipment. According to the national distributors, Standard Safety Products Co., a carefully planned installation of several units may be used for the protection of open areas as well.



INSULATION TESTER

(Use Key # 787 on Inquiry Card on page 71)

THE DEVELOPMENT of a new TAKK 5000 Volt D.C. Insulation Test Set is announced by The Hewson Co., Inc. This instrument is used as a preventive maintenance tool on all types of low-voltage electrical and electronic apparatus, including motors, wiring, transformers, switchgear, telephone equipment, circuit breakers and similar equipment. The Model 53-5 KV Test Set combines in one small instrument (weight only 15 lbs.) a 5000 volt D.C. power supply and an ultra sensitive current meter, each of which can be used independently. It provides a voltage range from 0 to 5000 volts (continuous, variable) and 5 current ranges: 0–0.1 microampere; 0–1; 0–10; 0–100 and 0–1000 microamperes. The microammeter is extremely sensitive and accurate. Current readings as low as 0.002 microamperes and resistance readings up to 5 million megohms may be taken.

The unit performs over-voltage tests, resistance tests, breakdown tests and dielectric absorption tests. It utilizes proven test procedures already widely used in the higher voltage field. This tester gives warning of weaknesses or defects in insulation so that maintenance procedures can be carried out before there is a costly breakdown.

GERMICIDAL PADS

(Use Key # 788 on Inquiry Card on page 71)

A SIMPLE wiping with a new disposable cloth wafer, impregnated with an active germicide that is harmless to human beings, sanitizes and deodorizes telephone mouthpieces in a few seconds. The cloth pads, named tel-O-cide and packed in jars of one hundred, are recommended for regular telephone hygiene in offices, factories, or institutions.

General Scientific Equipment Co., distributor of the pads, emphasizes that moisture from the pad dries almost instantly on the mouthpiece and receiver, requiring no additional wiping to return the instrument to service after disinfecting.

FRAMES FOR POSTER DISPLAY AND STORAGE

(Use Key # 789 on Inquiry Card on page 71)

AN ATTRACTIVE, chrome plated, glass front frame, designed specifically for displaying standard 8½ x 11 posters, has been developed by A. C. Davenport and Son, Inc., manufacturers of safety, directory and cork bulletin boards.

The new frame is designed so that it can be "magazine loaded." As many as six posters can be stored in the back of the frame. In this way, when a change in posters is desired, it is necessary only to remove the poster on display. The next poster will immediately be in place.

Ruggedly chrome plated, the Dav-Son Safety Poster Frame is available in either single or double frame sizes. Sturdy construction, with mitered corners and reinforced backing, assure years of service.

EXTRA TANK FOR VACUUM

(Use Key # 790 on Inquiry Card on page 71)

OWNERS OF WET vacuum machines can increase the recovered liquid capacity of the equipment by 15 gallons, through the use of a Hild Add-A-Tank, made by the Hild Floor Machine Co. The units can also be used as a water-separator with built-in vacuum systems.

The Add-A-Tank was designed originally to increase to 25 gallons the capacity of the Hild Model 115 "Fool-Proof" Vacuum. With the intake hose connected to the extra tank, vacuum suction first fills the extra tank to its full 15-gallon capacity. Water then flows over into the 10-gallon vacuum tank through a connecting hose.

The extra tank may be obtained with a wheel carriage, making it fully portable. It is also available without wheels for placement on a hand truck along with a de-wheeled vacuum tank. The Add-A-Tank is easily emptied by bailing out a few pailfuls and dumping the rest.

What's YOUR Problem?

- **Has an accident or fire interrupted production?**
- **Want to know how to prevent it?**
- **Do you need background information on equipment for industrial safety, hygiene, or maintenance?**

As a service to its readers, "Safety Maintenance" will arrange to supply manufacturers literature on the following subjects. Just insert the key number on the Readers Inquiry Card on the opposite page and be sure to fill in your name and address. If you need information on a specific type of product, simply write it in on the Inquiry Card.

Key Number	Subject
101	Safety Goggles
102	Face Shields
103	Lens Cleaning & Anti Fogging Equipment
104	Sweatbands
105	Hard Hats
106	Respirators & Masks
107	Protective Clothing
108	Women's Protective Clothing
109	Safety Belts
110	Safety Gloves
111	Safety Toe Shoes
112	Safety Boots
113	Wooden Sole Shoes
114	Anti-Slip Soles
115	Oil-Proof Soles
116	Welding Helmets
117	Welding Curtains
118	Protective Skin Creams
119	Skin Cleansers & Soaps
120	Hand Drying Equipment
121	Sanitary Drinking Cups
122	Athlete's Foot Control
123	Salt Tablets
124	Noise Control
125	Antiseptic Medication
126	Burn Medication
127	First Aid Kits & Supplies
128	Stretchers & Litters
129	Resuscitators

Key Number	Subject
130	Portable Ventilators
131	Dust & Fume Collectors
132	Carbon Monoxide Control
133	Fire Extinguishers
134	Safety Cans
134A	Extinguishing Ash Trays
135	Fire Pump Equipment
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137	Safer Solvents
138	Flammable Liquid Pumps
139	Explosion-Proof Lights
140	Safety Gasoline Tanks
141	Anti-Slip Flooring
142	Anti-Slip Waxes & Finishes
143	Floor Cleaning Products
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145	Oil & Grease Absorbents
146	Paints
147	Ladders & Safety Devices
148	Scaffolds
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150	Fluorescent Lamp Guards
151	Machine Guards
152	Power Press Feeders
153	Safety Signs
154	Aisle Marking Equipment
155	Safety Awards & Emblems
156	Employee Safety Guide
157	Hand Tools

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

PERSONAL PROTECTION

Disaster Equipment 559
Mine Safety Appliances Co. An unusually instructive booklet, designed to assist industrial plants in choosing safety and rescue equipment for use in emergencies, such as fires, explosions, tornadoes, etc. Divided into 5 sections, the booklet shows the needs of a rescue team, engineering team, and medical team, and contains an equipment check chart and a catalog of individual items.

Visored Goggles 560
Jones & Co. Illustrated folder shows several models of light-weight one-piece plastic lens goggles (clear or green) that have an opaque shield across the top to prevent glare from overhead lighting.

Aluminized Asbestos Clothing 561
Industrial Safety Specialties Co. Swatches of aluminized asbestos are included in this illustrated folder describing heat and fire resistant garments for industrial workers, firemen, rescue teams. Included is a rescue kit for truckers, police cars and ambulances.

BUILDING MAINTENANCE

Waxless Floor Finish 562
Brulin & Co., Inc. A waxless, non-plastic emulsion floor finish that is listed by U.L. as an anti-slip material is described in this bulletin, which emphasizes that no buffing is required. Suitable for all types of floors.

Maintenance of Cement & Terrazzo Floors 563
Hillyard Chemical Co. A file folder offers treating specifications for cement and terrazzo floors, including tips on laying the floors, sealing them, proper cleaning methods and daily maintenance. Various steps in use of maintenance products well illustrated.

Steel Tile Floors 564
Flash-Stone Co. Illustrated 4-page folder shows use of metal floor plates, embedded in concrete for factory areas subject to extreme wear and abuse. Non-slip features and safe anchoring of plates are outlined.

Preserving Concrete Floors 565
Stonhard Co. A pocket-size folder explains how the use of a special concrete seal prevents "dusting" and protects the surface against damage by food acids, grease, oil and abrasive wear.

Tubular Steel Scaffolding 566
Beaver Art Metal Corp. A 16-page general catalog and parts list for tubular steel scaffolding and materials hoisting towers for construction and maintenance. Fully illustrated, the catalog also features safety rules for erecting the scaffolds.

LIGHTING

Emergency Lighting Unit 567
Electric Cord Co. An automatic emergency lighting unit is described in a 4-page folder. Features outlined are: new type battery, automatic charging, better light, 5-year guarantee. The unit plugs into regular circuit and provides illumination if circuit fails.

Portable Lighting Lines 568
Joy Mfg. Co. A 12-page bulletin on prefabricated lighting and tool lines for industry. The assemblies consist of end connectors and outlets with rubber covered cable, and are watertight and designed for hard usage in setting up emergency or maintenance lights and power lines.

MATERIALS HANDLING

Portable Drum Dumper 569
Gifford-Wood Co. Illustrated data sheet describes a tower for mechanically elevating and emptying containers into high-walled receptacles. Push-button operation makes unit semi-automatic; suitable for various sizes of drums; has special discharge spout to control dust.

Hand Lift Trucks 570
Market Forge Co. A check chart of features to look for in selecting a hand lift or hand pallet truck. This analysis consists of 34 questions relating to safety, performance and ease of maintenance. Also includes information on a hand-truck rental plan.

TRANSPORTATION

Truck Tank Discharge Valve 571
Chem-Valve Corp. A stainless steel discharge valve for unloading bulk liquids is described in this folder. The new design is said to be non-clogging and eliminates the need for heating the outlets in cold weather when heavy liquids congeal.

Dual Wheel Dolly 572
Romay, Inc. A dolly specifically designed for changing truck dual wheels but that can also be used for single wheels is described in this illustrated bulletin. The unit is said to make wheel changing by one man simpler, easier, faster.

Vehicle Sanding Unit 573
Automotive Sandtrax, Inc. Bulletin describes a powered sander for mounting in cars to spread sand for the rear wheels. Sand hopper is mounted in car's trunk with discharge tubes to the wheels. It is controlled by foot pedal and powered by exhaust.

FIRE PROTECTION

Flammable Liquid Storage & Dispensing 574
Protectoseal Co. This illustrated guide explains modern fire-safe methods of receiving, storing and dispensing flammable liquids. Shown are approved drum fittings, vent bungs, self-closing faucets, pumps, drip cans and other accessories.

Non-Flammable Hydraulic Fluid . 575
E. F. Houghton & Co. Dramatically presented in this folder is the story of how the use of a non-flammable hydraulic fluid can

(Continued on next page)

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protect personnel, property and production. Approved by Factory Mutuals, the fluid is recommended for use in hydraulic equipment near high heat or open flames.

Fire Pumps 576
Marlow Pumps. Portable fire fighting pumps are described and illustrated in this bulletin, which includes performance data and engine specifications.

INSTRUMENTS

Conductivity Tester 577
Associated Research, Inc. Bulletin describes an instrument for measuring the conductivity of hospital operating room floors, personnel and equipment, in accordance with N.F.P.A. recommendations. Also suitable for ordnance, chemical, paint and refinery plants or where static electricity may be a hazard.

Electronic Metal Detector 578
RCA Victor. Tramp metal, either magnetic or non-magnetic, can be detected by this electronic unit, according to a 4-page bulletin. Suitable for installation on belt conveyors, the detector can be used with a warning alarm or light or set up to stop the conveyor if any tramp metal is present.

MISCELLANEOUS

How to Make Guards 579
Harrington & King Perforating Co. An easy way to make machinery guards from standardized parts is outlined in this informative folder. The five basic parts are shown and typical assemblies illustrated, such as guards for belts, presses, flywheels, etc.

Flexible Hose & Duct 580
Flexhaust Co. Industrial installations of flexible hose and ducts for moving air, dust, fumes, gases and materials are described in this illustrated bulletin. Applications include sawdust removal, spot heating or cooling, abrasive dust collection, smoke & fume removal, dehumidification and air conditioning.

Antiseptic Protective Cream ... 581
C. B. Dolge Co. This folder describes a protective skin cream for use against irritants in cutting oils, solvents, thinners, paints, etc. To prevent bacterial infection, the cream also contains hexachlorophene.

Cut Accident Costs 582
U. S. Envelope Co. You can cut accident costs by getting safety messages right to the worker through the use of paper cups imprinted with safety slogans, according to this folder which also points out the hygienic and morale advantages of providing individual sanitary cups.

New Awards Catalog 583
Williams Jewelry & Mfg. Co. The new 1955 Industrial Awards and Incentives Catalog features the new Green-Cross plaque and ideas for promoting safety programs in the plant or office.

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